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Identifiers- Illinois, Manpower Development and Training Act Programs, MDTA Programs

The 74th Illinois General Assembly created the Illinois Commission on Automation and Technological Progress to study and analyze the economic and social effects of automation and other technological changes on industry, commerce, agriculture, education, manpower, and society in Illinois. Commission members visited industrial plants and business and government offices having automated and computerized systems. One-day hearings were held on the meat packing, banking, and insurance industries, and a 2-day hearing was held on the vocational education and manpower training programs. The Commission's investigations revealed that (1) Technological change has brought about such events as obsolescence of meatpacking plants, a decline in railroad jobs, and a reduction in coal mining operations, (2) The Manpower Development and Training Act is failing to meet the needs of changing industries, (3) The vocational education system is not keeping up with current needs, (4) Industry is not contributing enough to retraining workers displaced by automation, (5) Government agencies are not doing enough to conduct research into new occupational fields, and (6) The financing of job programs must be changed so that local authorities can be brought into closer contact with the programs. Based on its findings, the Commission formulated 22 recommendations in the nature of proposals and suggested changes in public policy and programs. (HC)

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# REPORT/1967

State of Illinois

Commission on Automation and Technological Progress

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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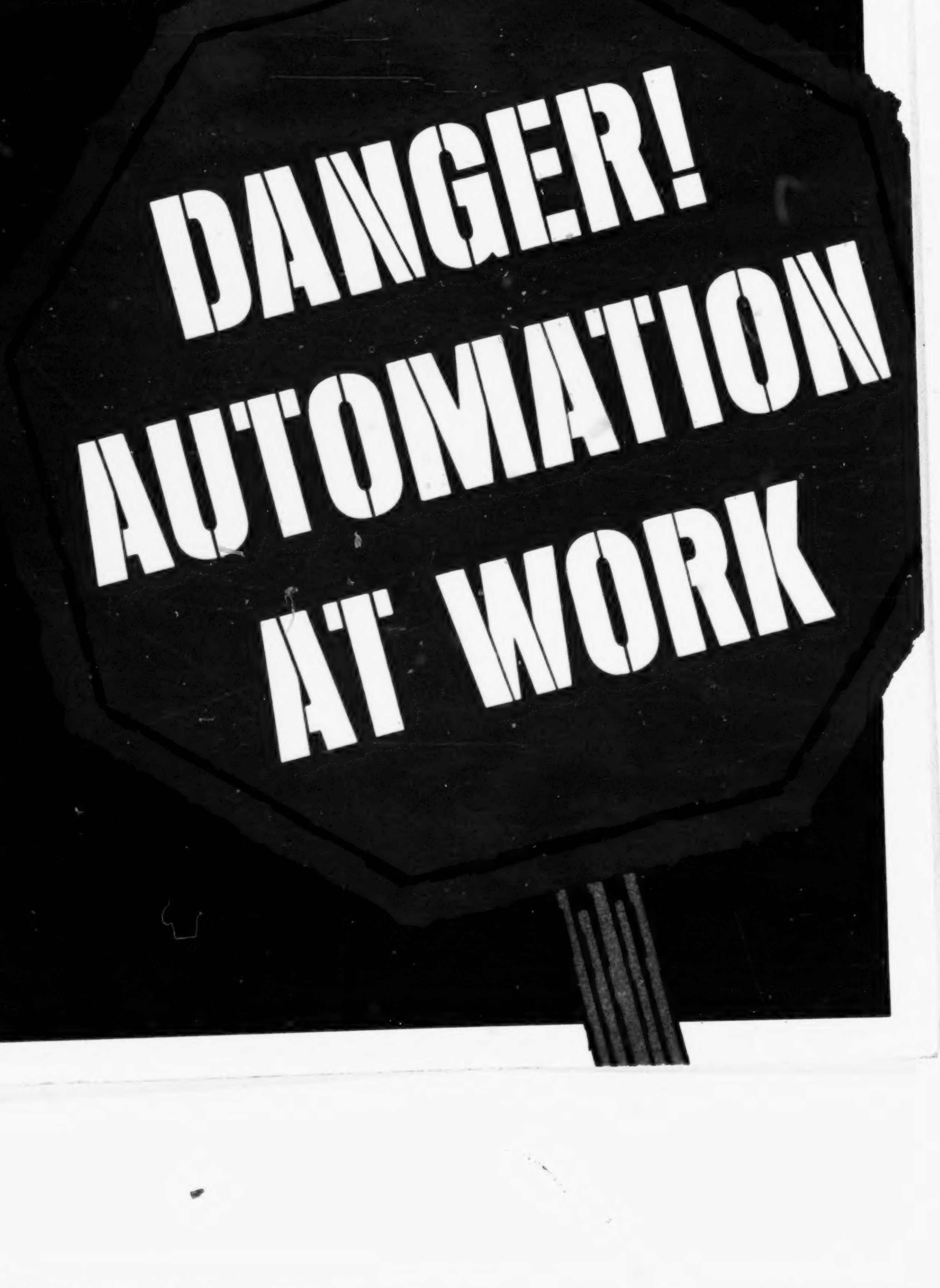

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PUBLIC MEMBERS
MILTON BRAM
BUDDY W. DAVIS
EUGENE GLOVER
LARRY S. PROVO

The Honorable Otto Kerner
Governor of the State of Illinois
and
Members of the Illinois General Assembly

Gentlemen:

In behalf of the members of the Illinois Commission on Automation and Technological Progress, I have the honor to transmit to you a Report of activities as required by HB 1310.

This Report summarizes information and data received in proceedings before the Commission during the period 1965-67. Based on our findings, we present a series of twenty-two (22) recommendations which we believe worthy of your consideration.

Members of the Commission wish to express their appreciation for an opportunity to serve the State of Illinois in this field.

Respectfully submitted,

Chester P. Majewski

Chester P. Majewski
Chairman

*There is danger in automation, but only if we do nothing about it.*

1967 Report of the State of Illinois Commission on
Automation and Technological Progress

*. . . Invention and innovation lie at the heart of the process by which America has grown and renewed itself.*

TECHNOLOGICAL INNOVATION:
ITS ENVIRONMENT AND MANAGEMENT
U. S. Department of Commerce,
January, 1967

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# REPORT

*of the*

*State of Illinois Commission on*
*Automation and Technological Progress*

**Prepared under the Direction of**
**WILLIAM KARP,**
**Public Member and Secretary**

**State of Illinois, April 1, 1967**

# State of Illinois Commission on Automation and Technological Progress

## OFFICERS OF THE COMMISSION

| **CHAIRMAN** | **VICE CHAIRMAN** | **SECRETARY** |
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| State Representative | State Senator | Public Member |
| CHESTER P. MAJEWSKI | TOM MERRITT | WILLIAM KARP |

## MEMBERS OF THE COMMISSION

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|---|---|
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| BERTIL T. ROSANDER | JAMES VON BOECKMAN |
| PAUL A. ZIEGLER | JOHN CLINTON YOULE |

### PUBLIC MEMBERS

MILTON BRAM*
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BUDDY DAVIS
Staff Representative,
United States Steelworkers,
District No. 34

EUGENE GLOVER
General Vice President,
International Association
of Machinists

WILLIAM KARP
President,
William Karp Consulting
Company, Inc.

LARRY S. PROVO
Executive Vice President,
Chicago & North Western
Railway

**Replaced Frank H. Cassell who resigned to become Director of U.S. Employment Service*

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For More Information on the Appointment and Composition of the Commission See Page 12.

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# FOREWORD AND ACKNOWLEDGEMENTS

Scientific and technological progress has been moving forward with great momentum. In 1961 alone, 49,980 inventions were patented from among 85,776 applications. The number of inventions patented in that one year was equal to the number patented in the first hundred years of United States history.

American standards of life have undergone marked changes in every direction. In recent years, through television, radio, magazines and newspapers, the public at large has come to recognize the vast effects of science and technology upon their daily lives. Everywhere there is speculation about the future and the meaning of these developments for human life.

Most people have looked upon technological progress and these changes as beneficial. Both nuclear fission and fusion promise entirely new ways of thinking about what energy is, where it comes from, and how it can be put to work. Travel to distant points has been shortened from weeks or even months to hours. Communication time has been abbreviated from days to microseconds. Many dirty, menial and repetitive jobs have been eliminated. Working hours have been shortened. Increased wages in the United States have raised living standards for a larger number of people beyond those in any country in history. More leisure time prevails. The quality of life itself has been raised along a broad front. New interests and experiences have added zest to the lives of many Americans.

On the other hand, rapidly advancing technology has heightened concerns and fears that have led some to question its benefits. One of the greatest concerns today is the possibility of annihilation by "the bomb." Another concern is the harmful impact of modern technology upon the health and welfare of the community. Urban congestion, slums, and depletion of natural resources are also persistent problems. Still another concern is the impact of industrial, technical and urban aggregations upon human personality resulting in such symptoms as insecurity, monotony, alienation, and mental illness. Yet another concern is the belief that technological change, including automation, will soon eliminate many unskilled, semi-skilled, skilled, and even office jobs.

On balance, scientific and technological progress has been a boon to the people of Illinois and the country. There is no reason to curtail innovation or slow down the rate of progress. The great task before us is to exercise intelligent control over science and technology towards the end of fulfillment of human purposes and social goals. In this direction lies the enrichment of human life for all of our citizens.

Technological innovation carries great promise for Illinois. But what will be the effects of these developments upon industry, agriculture, government, community life and culture? Will increases in productive output of goods and services mean large scale job displacement? How will productivity gains be shared? Will unemployment increase and persist? Will economic stability be impaired? These and many other questions can be asked, but they cannot be answered easily. In fact, at the present time, we do not know the precise impact technological progress has had or will have in the future upon industry, labor and government. We know even less how science and technology affect social, economic and political institutions.

To search for an answer to these and other questions, I sponsored H.B. 1310 and was joined in this sponsorship by other members of the legislature. House Bill 1310 was passed in the 1965 session of the Illinois General Assembly and signed into law by Governor Otto Kerner. This bill created the Illinois Commission on Automation and Technological Progress. The Commission was given broad powers for the period 1965-67 to study and analyze the effect of automation and other technological changes on the business, industry, and agriculture of Illinois; on educational and training programs; on employment; on Illinois government—in short, on the entire State and its citizens.

The Commission was given an appropriation with which to carry out its responsibilities. The amount provided proved to be inadequate for the tremendous task given to the Commission. Fortunately, however, the personal and financial assistance provided by members of the Commission and personnel of Illinois departments and private organizations enlarged our capacity to function. Without this help, the work of the Commission would have been severely handicapped.

The Illinois Commission on Automation and Technological Progress represents the first attempt to look carefully at automation in Illinois and analyze its total effects. In the months that have ensued since its inception the Commission has carried its study to the mills, the factories, the public agencies, and conference tables, meeting with specialists knowledgeable in the effects of automation on business, labor, agriculture, education, and government. Commission members have learned about the plans of industry, the aspirations of workingmen, the problems of communities, and the solutions proposed by government leaders. They have heard many hundreds of pages of testimony about automation.

As a result of this study, the Commission has prepared and herewith is submitting 22 recommendations proposing new procedures, new plans, and new programs for dealing with automation and technological change.

This Report on the work of the Commission embodies the Commission's understanding of automation and technological progress in Illinois today, the promises these great advances hold, and the problems these technological changes lead to if they are not employed for the benefit of all citizens. This Report is submitted to the Executive and Legislative branches as the basis for further action on automation in Illinois.

It should be understood, however, that this Report necessarily represents an "interim" statement on automation and related subjects. The whole field of technological change is so dynamic, so complex, so much in flux that no document based on such a brief period of investigation could be a final statement on the subject.

Given the time and funds available to it, the Commission went as far as it could go in its study. Yet much more remains to be done in Illinois to understand the nature of automation, to avoid its problems, and thereby to capitalize on its immense potential benefits.

We owe a debt of gratitude to the members of the Commission who conscientiously gave of their time and effort. Those worthy of mention in this connection are:

State Senators Morgan Finley, John A. Graham, Tom Merritt, Bertil T. Rosander, and Paul A. Ziegler.

State Representatives J. David Jones, William Schoeninger, James von Boeckman, and John Clinton Youle.

Public Members Milton Bram, Buddy Davis, Eugene Glover, William Karp, and Larry S. Provo.

We acknowledge a special debt to our Secretary, William Karp, for his professional competence in developing and coordinating Commission activities. He gave unstintingly of his knowledge and of himself. Much of the success and accomplishments of the Commission can be attributed to his efforts.

We wish to thank John E. Cullerton, Director, Illinois Department of Labor, for his counsel, advice, and assistance. His recommendation of Miss Esther E. Espenshade, Supervisor, Division of Statistics and Research, to work with the Commission proved to be an invaluable asset to us. Samuel C. Bernstein, Administrator, Illinois Bureau of Employment Security and Gene H. Graves, Director, Illinois Department of Business and Economic Development were most generous with their counsel and support.

Although it is impossible to acknowledge all those who assisted us, I should like to mention in particular the following: Frank H. Cassell, Director, U.S. Employment Service, an original Public Member appointee; Irving Beller, Economist, AFL-CIO; DeVer Sholes, Research Director, and John M. Coulter, Research Associate Director, Chicago Association of Commerce and Industry; Robert M. Perry, Manager, Labor Relations Department, Illinois State Chamber of Commerce; and Mrs. Miriam K. Ringo, assistant to the Governor.

We also wish to thank all those who appeared as witnesses at Commission Hearings and otherwise gave of their knowledge.

To Miss Charline S. Kaehny we express appreciation for her diligent secretarial assistance.

Special thanks are due Arthur Sallander Studios, Chicago, for the contribution of the cover design.

Lastly, we owe a deep debt of gratitude to Kenneth M. Wylie, Jr. for his editorial skill and writing ability in connection with this Report.

Chester P. Majewski
Chairman, State of Illinois Commission on
Automation and Technological Progress

*Shown testifying October 20, 1966 before the hearing conducted by the Illinois Commission on Automation and Technological Progress is William M. Fishback (seated far right at microphone), Assistant Chief of Downstate Operations, Illinois Department of Public Aid. Commission members facing him are (l. to r.) William Karp, president, William Karp Consulting Company, Inc., Chicago, secretary and public member of the Commission; State Rep. Chester P. Majewski (D. Chicago), chairman of the Commission; State Rep. William Schoeninger (D. Chicago), chairman of the committee conducting the hearing; and Milton Bram, Bram & Associates, Chicago, public member of the Commission.*

# Illinois Takes a Hard Look At Automation

## *a summary*

### What Has Automation Done to Illinois, What Can Automation Do for Illinois?

The changes of automation arrive large, fast, and sometimes painfully.

Illinois is not the same today as it was before automation came in the latter 1950's, and Illinois wants to know why. And not only why, but also, What went wrong? and, What went right?

Century-old meat-packing plants that made Chicago, "Hog butcher to the world," suddenly moved out of the state, and 15,000 Illinois citizens were out of work. Insurance firms stopped hiring the same kinds of employees. Often the newest types of industries never came to Illinois in the first place. And the State's educational system seemingly kept teaching students to do jobs that industry didn't want done anymore.

To find the reasons for these changes, Illinois in 1965 created the State of Illinois Commission on Automation and Technological Progress.

The job assigned to the Commission was to give automation in Illinois a hard look—but not a *long* look because of the brief time available to the Commission for its study. Then, having reviewed and analyzed automation and other technological changes in the State, the Commission was to make recommendations to the Illinois General Assembly for new ways to make automation a more useful tool for Illinois business, industry, agriculture, and public agencies and a less troublesome change for Illinois citizens.

These recommendations the Commission has made, 22 of them, ranging from a provision that industry give employees advance notice of plant shutdowns to a suggestion that the State develop systems, including computer applications, for disseminating research information throughout Illinois to industry, universities, and State agencies.

### Producing the Remedy

Although California has had an automation commission, West Virginia has legislated on automation, and other states have taken executive action in this area, the Illinois Commission on Automation and Technological Progress is the only functioning interim state commission in the United States focusing its attention directly on the impact of science and technology.

The bill creating the Commission, HB 1310,[1] was passed on August 18, 1965. Chief sponsor of 1310 was Chester P. Majewski (D. Chicago). According to the provisions of this Act the Commission was to:

". . . study the economic and social effects of automation and technological changes in industry, commerce, farms, labor market, and in society."

The Bill further stated:

"The Commission shall study, investigate, analyze, and assess existing knowledge, problems, growth, effect and future tendency of automation and all other technological changes on industry, commerce, farms, labor market and society of the state of Illinois, and on the employment, training, retraining, economic change, economic hardship, social implications and benefit to industry, labor and the public, and on the programs, policies, operations, finances and fiscal burdens of the government of our state and its subdivisions, that have resulted and will result from such changes."

### Money and Hands to do the Work

The creating Act provided a sum of $25,000 to finance the work of the Commission during the 1965-67 period. And it provided that the body should consist of 15 members, including five members drawn from the House of Representatives, to be appointed by the Speaker of the House; five members from the Senate, appointed by the President pro tem of the Senate; and five members of the public, appointed by the Governor.

The Commission officers, drawn from this membership, are State Rep. Chester P. Majewski, chairman; State Sen. Tom Merritt, vice chairman; and William Karp, secretary.

For the purpose of expediting its work, the Commission was organized into four functional committees, covering, 1) Automation Developments in Industry and

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[1] For the full text of H.B. 1310 see Appendix, pg. 104.

Agriculture; 2) Manpower, Unions, and Labor Relations; 3) Education and Research Projects, and 4) Government Programs.

The work of these committees was structured into 17 principal subject areas covering several broad topics including:

- The effects of automation on industry, agriculture, government, labor, employment, and communities.
- Studies now underway concerning automation, including State and Federal studies and university research.
- Educational and training programs intended to cope with technological change.
- Government, industry, and union programs now in operation and being planned that are related to automation and its effects.
- Recommendations for legislation to deal constructively with automation.

## The Commission Listens, Studies, Investigates

To find out what automation has done to Illinois and to understand what it can do for Illinois, the Commission has conferred with representatives of industry, labor, business, government, and education. Its members have traveled to automated factories, mills, and offices; met with government leaders who have taken action on automation and technological change, discussed possible remedies with labor leaders, government and business executives, and educators. During 1966 the Commission conducted a fast-paced series of hearings, conferences, and field trips, including the following:

### Hearings

Meat Packing, July, 1966; Banking and Insurance, September, 1966; and Vocational Education and Manpower Training, October, 1966.

### Conferences

Washington, D. C., August, 1966—meetings with leaders of Federal Executive and Congressional groups and leaders of industry and labor organizations.

California, December, 1966—a survey of the work of the California Commission on Manpower, Automation, and Technology, for the purpose of benefitting from that Commission's findings and experience.

### Field Trips

Visits to the Inland Steel Company; Caterpillar Tractor Company; Franklin Life Insurance Co.; the American Bankers Association Convention; Bureau of Labor Statistics, and U.S. Treasury.

## Seeing a New World

The picture that these studies and inquiries created before the eyes of the investigators was a picture more constantly changing and dramatic than anything displayed by network TV, COMSAT, or Cecil B. DeMille.

*To gain first-hand familiarity with technological change, members of the State of Illinois Commission on Automation and Technological Progress made field trips to Illinois industrial installations including the East Peoria plant of the Caterpillar Tractor Co. where they are shown, above, viewing a tape-controlled production machine in operation. While Plant Manager Gordon Swardenski (right) explains the automated equipment and Orville Masterson, machine operator (second from right) stands by ready to assist him, Commission members observe, including (l. to r.) Rep. James von Boeckman; Rep. William J. Schoeninger; Sen. Tom Merritt, Commission vice chairman; William Karp, public member, Commission secretary; and Rep. J. David Jones.*

It was a picture of factories, farms, offices, schools, and whole communities changed forever.

Meat packing closed its biggest slaughtering plants in Chicago and moved to outlying towns, often in other states. Why? Its old multi-storied plants were inefficient; new mechanized devices reduced manpower needs; the refrigerated truck and modern highway put almost any location near enough to big population centers, and often "almost any location" meant a small community with lower taxes and accommodating public and private officials. Altogether the changes meant the loss of 15,000 jobs in Chicago.

At the same time, the banking and insurance industries, carrying on vastly more work in our growing, increasingly complex economy, generally have not decreased employment. In some instances they have increased it. But they are now hiring a different, more skilled employee whose productivity is much greater.

Our vocational schools and manpower training agencies, responsible for preparing employees for the new jobs, often have been hampered by obsolete curricula, inadequate equipment, and lack of far-sighted coordination.

### Making the Recommendations

On the basis of its findings, the Commission has formulated 22 recommendations, shown here in brief form (for complete text see page 99):

1. Extend the Commission for two years, 1967-69, so that its vitally important work can be completed for Illinois.

2. Fund the Commission at $171,500 for the biennium, enabling it to employ, for the first time, a professional staff in addition to contributed help.

3. Conduct regular and continuing surveys of technological progress of all industry in Illinois.

4. Prepare a Governor's annual report assessing the impact of technological progress in Illinois.

5. Expand Illinois' activities under the Federally enacted State Technical Services Act of 1965 which is aimed at encouraging economic growth in the states through more efficient application of new science and technology to business and industry.

6. Conduct a series of conferences to help establish Illinois State goals and policies in the fields of science and technology.

7. Enlarge the scope and flexibility of data collection and analyses of labor- and employment-related data concerning all areas of Illinois; distribute widely to business, government, communities, and labor organizations.

8. Make the Illinois Science Advisory Council a permanent body.

9. Appoint a scientist to serve as Science and Technology Adviser to the Governor.

10. Study the impact of industrial and technological change on the functions and services of the Illinois State Employment Service.

11. Develop a coordinating council of manpower training, vocational training, and education agencies, including those at university and junior college levels.

12. Create a comprehensive plan, for application in educational facilities below college level, for training youth in the new occupations emerging from technological change.

13. Review technological trends in industry and agriculture and use this information in planning new curricula for secondary and post-secondary vocational education.

14. Develop and increase contact (by State agencies) with industry for the purpose of carrying on cooperative relationships in educating and training manpower for new occupations.

15. Request U.S. Atomic Energy Commission to prepare a manpower table for the Weston Proton Accelerator Project. Develop programs in Illinois schools and training agencies to prepare students to meet the needs indicated by this table.

16. Establish an advance-warning system to give prior notice of plant shutdowns and relocations.

17. Make counseling and training available to employees who have been and are about to be displaced by technological change.

18. When voluntary measures fail, provide displaced workers with training and monetary assistance to help ease the shock of job displacement.

19. Establish State programs to assist communities whose economies have been depressed by technological change.

20. In each State agency, prepare a report on the effects of technological change on that agency's own operations.

21. Establish an executive development program, for State of Illinois agencies, that would familiarize supervisory personnel with the nature of scientific and technological progress.

22. Develop effective communication to rapidly disseminate research findings, in science and technology, to Illinois industry, universities, and state agencies.

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**NOTE:** *For the complete text of the Commission's 22 Recommendations, see page 99.*

# Illinois and Automation Mirror The Nation and Automation

## Continuation of History
## or
## Beginning a New History

Automation is changing Illinois. The question is, How much will Illinois change automation? How successfully can this great industrial-agricultural state make automation into a precisely controlled tool working for *all* its citizens?

Note that the term used in the question is *change*—not *limit* or *stop* or *ration*. For automation, which is the most highly developed application of science and technology to industrial and agricultural production and business services, holds great promise for Illinois, one of the most advanced production areas on earth.

Although automation presents great problems, it also holds great promise. Although it may displace some blue- and white-collar workers from their jobs and end the function of some firms, it can create more jobs and new types of jobs elsewhere and many new kinds of manufacturing and service industries here in Illinois. Although in 20 years automation may have remodeled the business and industrial landscape, rescheduled the workday, and categorized many of us into new kinds of employment classifications it also holds the promise of giving us the leisure we have always wanted and solving the primary human physical and social problems that have troubled our lives, our towns and our nations through history.

### Neither Licensing Nor Killing

Automation may change us. It will not ruin us. These changes, as we can foresee them, are not sufficient reason, as some have suggested, for declaring a moratorium on automation or censoring it or making it subject to Federal government license or committing what might be termed automacide or cybercide—killing the new force outright.

In 1967 and the years immediately before us the prime job facing Illinois in the area of industry and labor is going to be how to make automation work best, how to make automation most socially useful and most efficient for highly industrialized, agriculturally rich Illinois. And if Illinois can solve the automation problem with its complex of farms, industries, cities, and its webs of communications and transportation networks, then the nation can as well.

### The Warning, The Action

There is danger in automation, but only if we do nothing about it.

The clear recognition of this danger prompted Illinois in 1965 to establish the State of Illinois Commission on Automation and Technological Progress.

This Commission was not the first governmental body in the land to study the subject. Beginning in the 1950's, the United States Senate and House of Representatives have held extensive hearings on the related subjects of automation, technological change, unemployment, manpower policy, economic development, and training. In 1963 California established a statutory Commission on Manpower, Automation, and Technology. In the following year West Virginia enacted a law aimed at "rectifying its situations of unemployment and underemployment due to economic conditions, lack of skills . . . and other manpower problems caused by advancing technology."

With the establishment of its Commission in 1965 Illinois became the third state to pass automation-related legislation. And in recent years other states such as Massachusetts, New York, and New Jersey have dealt with technological and manpower problems through the offices of their governors, although not by means of legislation.

### The Only Commission of its Kind

The Illinois Commission on Automation and Technological Progress, however, is unique in being the only functioning interim state commission in the United States focusing its attention directly on the impact of science and technology.

The job of the Commission is clearly stated in H.B. 1310 which directs the Commission to, ". . . study the economic and social effects of automation and technological changes in industry, commerce, farms, labor market and in society." This job, however, has not proved to be a simple one. The difficulties encountered are symptomatic of the problems experienced by the whole of American society in coping wtih automation and other phases of technological progress.

After initiating its work in December, 1965 the Commission soon found that it was having difficulty getting information on Illinois' changing technology. It found a scarcity of such data in the State. Also, the Commission found that some leaders, in industry, labor, and government simply are not aware of how technological change is shaping and redirecting—not always pleasantly—the lives of the men, women, and children of Illinois.

Many of the Commission's efforts have been and must be concerned with assuring that these conditions are changed. And any future Commission must work continuously on these problems.

## ILLINOIS—THE BUILDING AND GROWING STATE

It is fitting that this unique body should be functioning in Illinois. As a giant of both industry and agriculture Illinois stands as a critical, supporting pier in the nation's economic structure.

Illinois is the leading U. S. exporting state in shipments of both industrial and agricultural products.

Depending on which tabulations are used, the state ranks either fourth in manufacturing, behind New York, Ohio, and California, or abreast of Ohio and immediately after New York and Pennsylvania. The range of Illinois products is almost limitless. There is hardly anything that isn't made here in some quantity, but in a long list of items the state's output ranking, compared to other states, is particularly impressive:

**First**—in machinery; fabricated metal products; electrical machinery.

**Second**—in printing and publishing; instruments and related products.

**Third**—in food products of all kinds.

**Fourth**—in chemicals and allied products; primary metal industries; glass, clay, and stone products; petroleum and coal products; furniture and fixtures; and miscellaneous manufactures including ordnance.

### Under, Across, and In the Good Earth

Illinois also is a major mineral producer, ranking fourth in coal production and eighth in petroleum. And by now Illinois has become world renowned as the place where the most trains and trucks and airliners, junction, stop, load, unload, recharge, and speed off in new directions. Chicago's O'Hare International Airport is the biggest and busiest commercial air terminal on earth, and in the Chicago rail switching district are more miles of tracks than in any of 38 states. Illinois' central location has been an important factor in the state's first rank as a transportation center; it also is responsible for making Chicago a major junction point for telephone and telegraph communications. Chicago ranks second in the U. S. as a financial center and insurance center. And although, at least for the present, Chicago no longer is a center of TV, radio, and theater entertainment its memorable contributions in this area range from Fibber McGee and Molly to Dave Garroway.

Yet this same state that is a builder, a miner, a dispatcher of cargoes also is a cattleman, orchardman, and good old fashioned dirt farmer. Illinois produces nearly every type of crop raised in the United States, except for some items peculiar to the semi-tropical and arid areas of the Southwest and Gulf regions. Eighty-five per cent of the state is in farms, and the value of its farm buildings is exceeded only by Texas and California.

Illinois is the second largest producer of crops, exceeded only by California which has nearly three times its land area. The State annually ranks first or second in corn production; first in soybeans; third in sweet corn; third in oats; third in total acreage of vegetables for processing; fourth in cheese production; and first in a variety of products such as Swiss cheese, horse-radish, and onion sets. Also, the state is one of the nation's leading producers of wheat, apples, peaches, and tomatoes.

There is more than plant life on the farms too. Illinois is the third biggest livestock producer, ranking after Iowa and California. In the production of hogs Illinois is second; in sales of all livestock, third; and in marketing grain-fed cattle, fourth.

### Illinois Means Business, the Arts, Science

Yet Illinois has not lived its century and a half as a state only for the mill, the marketplace, and the fruit and cattle of its prairies. This state is a center of learning and research, as evidenced by the University of Illinois, one of the oldest and foremost state universities in the nation; the University of Chicago, with its range of Nobel Prize winners and tradition of academic pioneering; and Northwestern University, noted for its leading schools of music, journalism, engineering, law, medicine, and dentistry.

In short, Illinois, contrary to some popular views, is not just a place where the railroads cross nor the New York to L. A. flight lands to air the minks and moguls. Neither is it factory town nor that old neighborhood the mob ran nor a folksy piece of the corn belt.

Illinois means business—and learning and the arts and sciences—and most of all, as the creation and work of this Commission indicate, Illinois means the well-ordered good life. The state is known variously as "The Prairie State" and "Land of Lincoln," but with all of its natural and made wealth it could just as well assume New York's title, "The Empire State," or California's "The Golden State."

No other state in the Union can claim to have produced the greatest volume of overseas exports, the biggest tonnage of steel, the first nuclear chain reaction, the most corn and soybeans, the world's busiest commercial airport, and TV's Kukla, Fran, and Ollie.

## A MICROCOSM OF THE NATION

Illinois represents the diversity of the entire nation, and like the nation as a whole this state has been going through a great period of technological change since the mid-1950's, and particularly since 1960. Illinois is a microcosm of the United States, and as such it is becoming increasingly populated with that dual personality known as automation, immigrating to our time and place with its half handsome, half troublesome faces, its bags and basket of promises, problems, and wealth.

### Fewer Hands, More Production

The loss of a job—even if it is only a temporary loss, which is referred to as *job displacement*—is not easy for the individual to endure without questioning not only his own employment status or the industry that employed him but eventually the whole economic, social, and political structure. And there has been considerable job displacement—and outright job loss—in Illinois and the nation during the past decade.

From 1956 till 1962, 28,000 workers across the nation lost their jobs in the meat-packing industry while production rose three per cent. In Illinois alone 15,000 meat-packing workers lost their jobs during this period. Other industries with similarly heavy representation in Illinois also had major job declines during this period. At one Chicago radio-manufacturing plant automation and other technological advances now make it possible for two men to assemble 1,000 radios a day, a job that formerly required 200 men.

Nor are these changes limited to factories and cities.

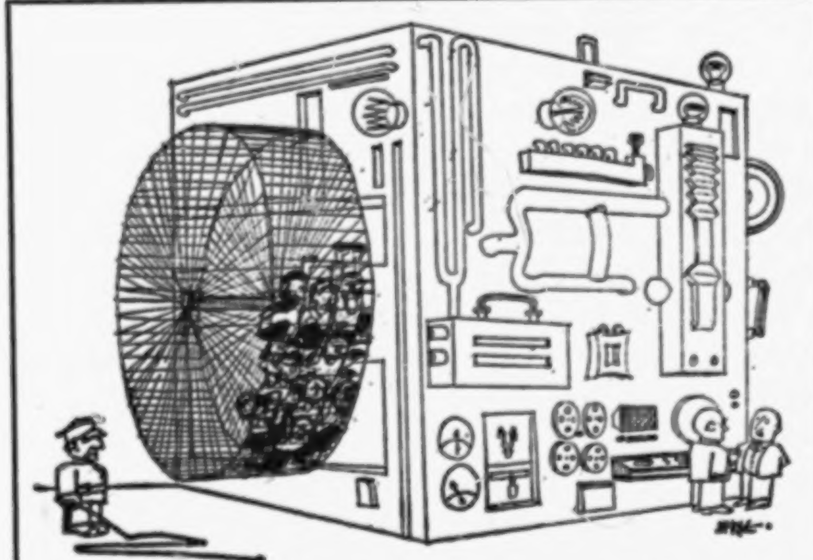
Modern agronomy and modern tools and chemicals, including the combine, chemical fertilizers and pesticides, tractors, and corn and cotton pickers have speeded farm work and often sent the farm worker into town permanently.

With present-day agricultural technology one man can grow enough to feed 24 people. As recently as 1949 he could feed only 15.

### Does Automation Cause Unemployment?

Such specific instances as these combined with the general and persistent unemployment that has been widespread in the U. S. since 1954 have caused many to believe that technological change, including automation, is a prime cause of men losing their jobs. Although unemployment has decreased in the past two years, probably due in part to the economic stimulation of the Viet Nam War, there still are 700,000 fewer jobs in factory production and maintenance than at the end of the Korean War 15 years ago.

Yet not all industrialists, economists, and other investigators who have studied automation are agreed on how automation causes unemployment or whether it causes it at all.



*"What happened to the men it replaced?"*

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In 1961, stating his dissent from the major report on automation issued by the President's Advisory Committee on Labor-Management policy, Dr. Arthur F. Burns, president of the Bureau of Economic Research, said:

"I know of no evidence to support the view . . . that technological advances are a major, if not the major, cause of recent unemployment . . . and I deplore anything that adds to the greatly exaggerated fears that many people have of what is loosely called automation."

In another dissent from the same report, Henry Ford II, chairman of the board of directors, Ford Motor Company, stated that he disagreed with the majority view because:

"Its major premise is the assumption that automation and technological advance are in and of themselves significant causes of unemployment—an assumption that neither history nor an analysis of current unemployment supports. . . . The factual evidence strongly indicates that, while automation displaces some individuals from jobs they have held, its overall effect is to increase income and expand job opportunities. History teaches us that, by and large, workers displaced by technological advance have moved rapidly into other employment, ultimately to better paying jobs. If . . . we would help persons displaced by technological advance, we must focus our attention not on relief or even training—though these properly conceived and administered, will help—but on creating new jobs for people who seek them and can perform in them."

### This is Only the Beginning

Others, however, take the contrary view, contending that automation does indeed cause unemployment and that it is too early yet to see what automation is going to do, or could do, to us. One of these is W. H. Ferry, vice president of The Center for the Study of Democratic Institutions and a member of the ad hoc committee that prepared a memorandum to President Lyndon B. Johnson, entitled "The Triple Revolution." This report was held by many, depending on their social and political views, to be either too revolutionary itself or a sorely needed landmark study of where America is headed. The report scans the U. S. today, finding three revolutions going on simultaneously, revolutions in cybernation (meaning the combination of automated equipment and computers), weaponry, and human rights. It suggests that our present socio-economic approach to changing American business, industry, and society no longer will work; that automation is going to change our world and our lives with it; and that we must get used to the idea of men receiving an income even if they do not "work" for it as we now conceive work.

In a sequel to this report Mr. Ferry discusses a prime, or *the* prime, cause for these changes—the progress and problems of automation or cybernation—ending with a warning:

". . . We are only at the beginning of the cybernating process, yet the ability of cybernation to supplant men is already breathtaking. We haven't seen anything yet. Only about one per cent of the machine-tool operations open to cybernation have yet been cybernated. A respected executive of a research and development corporation recently said that he 'shuddered to think' of the convulsions in society that will result from the work in progress he daily observed in laboratories and research centers . . . ."

## THE MEANING OF AUTOMATION

From viewing these statements it is clear that there are today conflicting opinions about what automation is, where it is, and how it is going to change us. To many, in 1967, it is not clear whether automation is the wolf at the door or our rich uncle arriving with a portentous attache case or some sort of white-coated technocrat riding up on a gleaming white machine (perhaps part credit-charger) ready to change our vail of tears to technicolor, lived effortlessly three days a week and climaxed by $30 every Thursday (or $100 at today's prices). But just as clearly there must be among these differing interpretations and the pictures they engender some middle ground where it is possible to get a clear, precise picture of what automation is, and where it came from. Only then in Illinois and in the nation can we plan its future use and control for the good of all.

### The End of Manufacturing

The term "automation" is not a contraction. It is an original word and probably was first used by D. S. Harder in 1936 when he was employed by the General Motors Corporation. Mr. Harder was using the term then in connection with automobile production, and he defined automation as, "The automatic handling of parts between progressive production processes."

As a term, "automation" was seldom used before 1954, and in those earlier days it referred to the connection of machine tools to automatic materials-transfer and handling equipment for *producing* items—no longer *manufacturing* items because the human hand no longer took part in the making operation. Material blanks were fed into the automated equipment, formed, milled, cut, held, guided from station to station, and finished. Good items were accepted, defective ones rejected, and the completed products were even sent on to be automatically packed, labeled, and routed to the customer according to his predetermined inventory needs.

In the earliest days of automation, the computer was not necessarily included in the system. Soon, however, it was recognized as a natural part of the system and became an integral member of the genus automation.

H. L. Goodman, a British electrical and mechanical engineer who has written cogently about industrial management and automation defines automation as:

". . . The technology of automatic working in which the handling methods, the processes, and the design of the processed material are integrated to utilize as fully as it is economically justifiable, the mechanization of thought and effort, in order to achieve the automatic and, in some cases, a self-regulating chain of processes."[2]

Mr. Goodman was writing 10 years ago when applications of automation, especially involving computers, were not nearly so widespread as they are today. Yet changes were coming. The call for the computer seems loud and clear in Mr. Goodman's references to "automatic" and "self-regulating" processes. Then he goes on to suggest that the call is becoming not a request but a demand:

"The object of automation is to make the best possible use of available resources: man, material, money, and machine. The definition clearly shows the need for the integration of handling, design, and processing, together with the application of automatic control, for otherwise an automatic or self-regulating system cannot be attained."

## Turn Out the Light, Make the Product

Now, the nature of automation begins to take shape before us. Note that it involves "man, material, money, and machine," but that is not all, for the definition also uses the terms, "integration" and "automatic control" and "self-regulating system."

It is no longer a question of a man taking a tool and a piece of material, stepping to a workbench and machine, turning on a light, and starting to hammer and cut to make a product. For we don't need the man (to do this job); we don't need his workbench or machine; we don't need the light. All we need is the material, the hammering and cutting operations—and the final product.

The only things that are essential now are the process and the product. Men are still needed to produce products, but not in the same way. Since human hands are not needed at each stage of manufacture, goods can be designed and produced differently.

If you want to build an automated radio or television set you do not make elaborate equipment that will duplicate human hands and tediously assemble soldered, wired circuits (excellent though they are). Instead you design something that can be made in one, simple piece, preferably by a continuous, that is, non-mechanical process. What you get is the printed circuit, quickly put together like a piece of printer's artwork and etched as a single sheet in a chemical bath. Similarly, if you want to build automated furniture or chinaware or plumbing fixtures, you don't try to put them together with mechanical carpenters, potters, and founders. Rather, you design chairs, bowls, and bathtubs that can be built by machines.

## Automation is a Philosophy, a Unity

In other words, for automation we design products that can be built by machines, not machines that can duplicate various manual steps to produce imitation hand-made products. This does not mean, though, that these products necessarily will be less attractive than the ones we have been accustomed to. On the contrary, they can still be attractive and even more functional than those we have used in the past. They may look, feel, and perform differently, and for our future world there is no reason why they should not.

Automation, then, is not just an electro-mechanical way to continue production as we have known it in the past. Since it combines, as L. Landon Goodman points out, "men, material, money, and machine," it is something more.

D. S. Harder, that probable originator of the automation term, called it a "philosophy of manufacturing." L. Landon Goodman reports that it has been termed, "an attitude of mind and a production objective as much as it is a technology." And John Diebold, a consultant who has contributed to the development of automation during the past decade, has stated that automation is a way of, ". . . thinking as much as it is a way of doing . . . ." And he elaborates:

"It is no longer necessary to think in terms of individual machines, or even in terms of groups of machines; instead, for the first time, it is practical to look at an entire production or information-handling process as an integrated system and not as a series of individual steps."[3]

## The First 999,900 Years Were Slow

Today, therefore, the producer of goods and services no longer can limit his vision to the four walls of the factory, the laboratory, the bank, office, or design studio. He simultaneously must be able to read and understand past mistakes and successes, current production, and future needs, and he must do this not only in his present market or geographical area or type of production but often in all parts of the world and in other fields of manufacture or service. The many mergers of dissimilar firms and agglomerations of differing operations are one kind of evidence of this trend.

Why is industry becoming broader, more inclusive? Why must the maker of goods and the source of services be concerned with so many more aspects of the market, the community, and life? The answer is twofold, and both phases are interrelated. They can be called the growth of science-technology and the increase of affluence.

With the passage of history we have learned more and more about the world we live in.

Man is learning about the world faster and faster just as he is changing it faster and faster. Man has been on earth about 1 million years, but in the past century we have learned more about our environment and how to control it than in the first 999,900 years. In every century since 1650 man has doubled his knowledge of the world. The rate of learning quickens, the new facts flick by. We know that we have gained more technological knowledge in the past 50 years than in all past history. And now as we look about us we can see that the vast majority of items in our material world have been invented within the lifetime of men living today.

As man knows more about the world he wants to enjoy and use it still more. And as his learning increases he is *able* to have more of its products. This is not just pointless curiosity and acquisitiveness. The more man knows about his world and universe the more he wants and needs to know. At the same time, the more he understands the earth, the atmosphere, the chemicals, plant life, tissue and blood of life, and the space of the universe, the more he wants to help, to improve, to use, and enjoy creation—and the more he is able to improve and enjoy through increased productivity.

Automation, including computers, is our era's technological step toward those goals.

The social advance that is the counterpart of automation's technological advance is the greater responsiveness of today's production and service industries to human capabilities and human needs. The problems threatened by automation are, first, the gap between improved production and men who cannot even take part in the production much less buy the products and, second, the gap between the general needs of all men tomorrow and the possibilities of automation tomorrow. Both gaps must be closed if our society is not to develop serious strains and break.

### Look Up to Higher Needs

In times past when the design of a kettle or chair or cart did not change in 50 years or a century or even several centuries, the builder of goods did not need to be concerned with the range of man's life but only with the size of his stewpot or the breadth of his milch cow stancheons. What has changed since then is the breadth and depth of man's learning. As the physical scientist, natural scientist, and social scientist have told us more about ourselves, and our world, they have helped to lift our eyes from the sick bed, the kitchen, and cow pasture. As the politician and lawyer and artist have taught us more about our lives and our communities and their betterment they have shifted our immediate attention from ourselves. And so today we come to a time in history when we can begin to give more attention to human needs and human wants.

A related historical sequence in the development of the United States has been traced by Dr. J. Douglas Brown, dean of the faculty of Princeton University, and a renowned economist. According to his outline the U. S. has passed through four great overlapping swings in the predominance of factors which pushed economic progress during the nation's history:

"1. **Land,** from the earliest times, was the key to economic success for the individual and society.

"2. **Capital,** with the industry revolution which developed in the North in the 1850's and much later in the South.

"3. **Invention,** then **Technology,** and later **Scientific Discovery** became the critical factors as industry was more highly developed.

"4. A fourth swing is already gaining momentum and developing a new focus of interest and concern. This is emphasis on **Human Resources** and their effective organization. These will become critical elements in American development in coming decades."

### Wheeled Carts, Floating Galleys, The Model T

The origins of automation, as a process, are not entirely clear. There are differences of opinion about its cause and beginnings just as there are about its effects. But even granting that it is a unique and original and unprecedented development, as some insist, it has to be seen as a part of the world that came before it and with it.

Some trace automation to the earliest labor-saving devices, beginning with the wheeled carts of Babylonia, about 3,000 B. C., the swape or shadoof of Egypt that replaced the hand-held water bucket with a bucket at the end of a long counterbalanced pole, and the Archimedes screw and Chinese chain pumps, also for raising water. Such historical reasoning then traces the development to a later and differing aspect of doing work in which the galleys of Venice were assembled by floating them down the canals of that city while Venetians in the bordering buildings handed out the equipment and gear for outfitting the ships as they floated past.

Picturing those Venetians preparing, organizing and piling up that equipment and loading it aboard, it is interesting to see H. L. Goodman's list of the four components of an automated system: mechanical handling, processing, sensing, and control.

Walter Buckingham, member of the Georgia Institute of Technology faculty and a student of automation, outlines four "fundamental principles" of automation and explains their historical development:[2,a]

1. **Mechanization**—The use of machines to do work. This development resulted from the fusion of several concepts of technology. It was based on the principles of machinery, particularly standardization of equipment and specialization of tasks. A prime example of this phase was the contribution of a boy, Humphrey Potter, who had the job of standing beside a rumbling steam engine, manually opening and closing the cylinder steam valve. After musing one day on what he was doing, young Potter fastened the cranking piston rod to the valve lever, making the opening-closing action automatic. He put himself out of a job, but as some of today's automation experts say is the usual case, he got a better one.

2. **Continuous Process**—The second technological revolution came in the early 20th century and was based on the principle of mass production which, in turn, was the implementation of a concept known as the *continuous flow*. This flow process was known in the 18th century and was first used in American flour mills for handling grain. Later this continuous flow theory was applied to automobile production by R. E. Olds, Henry Ford and European manufacturers who at first sent teams of specialized workers from car to car, doing the same work on each car. Then it was decided to bring the cars to the workers instead, and the modern assembly line was born. To move the cars, Ford and the others adapted the conveyor belt, a device in use by the meat-packing industry in Chicago since as early as 1870.

In 1923 the Morris Motor Company of England introduced a further advance in continuous flow called the automatic transfer machine. These machines, run from a central control panel, shunted parts from one piece of processing equipment to the next without the intervention of human hands. Although impractical in the 20's because of its heavy capital expense relative to labor cost, the automatic transfer process was brought into heavy use during World War II and is now a familiar part of the factory scene. Its development completed the evolution of mass production technology.

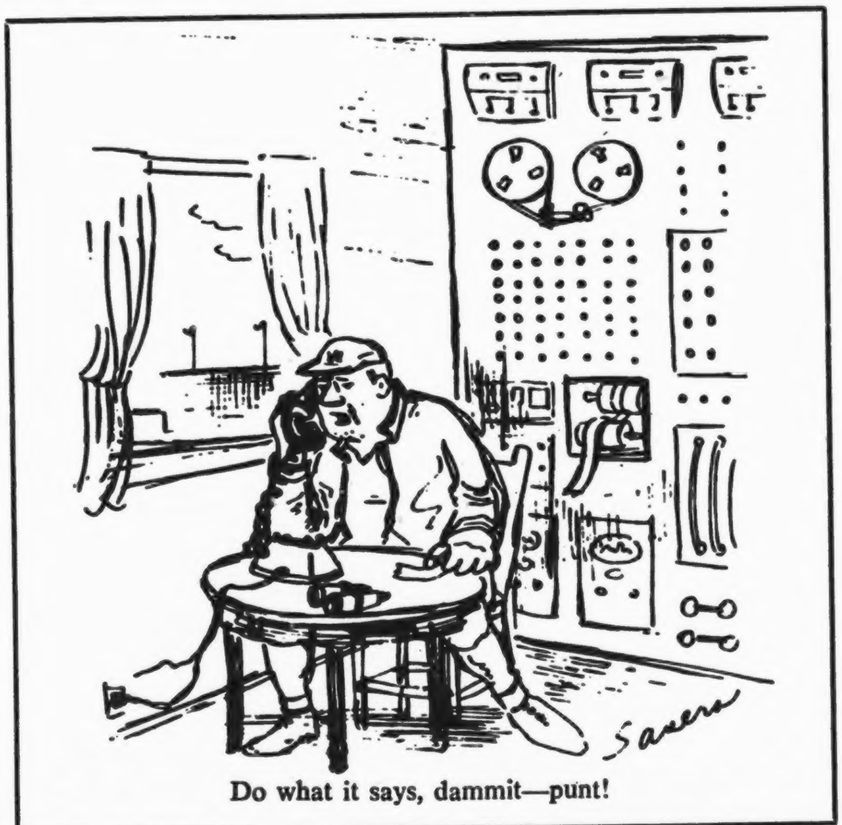
3. **Automatic Control or Feedback**—In this concept of machine control, the machine's output regulates its input so that the output meets predetermined needs. A good example is the thermostatically controlled furnace, but again, the principle is nothing new. Windmills in the 17th century were equipped with feedback devices to keep the blades facing into the wind, and James Watt's steam engine, as early as 1788, was equipped with flyball governors to control its speed. Today's feedback devices allow machines to perform such functions as stopping, starting, comparing, and measuring the dimensions and conditions of their surroundings.

4. **Rationalism**—It is the application of reason to the solution of problems and the search for knowledge that ties the engineering aspects of automation to its economic, social, and managerial aspects. Rationalism became an important force in the world with the Renaissance as man chose to solve problems by reason instead of through authority, revelation, and superstition. The first impact of rationalism was on natural science where it changed astrology to astronomy and alchemy to chemistry.

The development and use of computers today is a kind of super-rationalism, aimed at transforming society into a more exact mechanism.

### Logical or Profound Change

The relationship of automated devices and computers becomes more clear through this analysis. Man has been building his technological machine toward the



Do what it says, dammit—punt!

Reproduced by permission of Charles G. Sauer, Jr. and the SATURDAY REVIEW goal of maximum efficiency and speed of production. The computer supplied the precise control to reach this end.

In the purest sense, *Automated Devices* automatically perform sensing and motor tasks, replacing or improving on human capacities to perform these functions. *Computers* perform, at very high speed, routine logical and decision-making tasks, replacing or improving on human capacities to perform these functions.

As indicated, many of the components of automation have existed for hundreds of years. Some automation specialists state that this automation is simply the logical consequence of preceding conditions, that it is novel only in the way it has extracted its four components from all of man's stockpile of devices and theories for the purpose of using these components to produce goods and services automatically.

Others do not completely agree with this analysis. One of these is Donald N. Michael who states:

"Both optimists and pessimists often claim that automation is simply the latest stage in the evolution of technological means for removing the burdens of work. The assertion is misleading. There is a very good possibility that automation is so different in degree as to be a profound difference in kind, and that it will pose unique problems for society, challenging our basic values and the ways in which we express and enforce them."[4]

## MAKING IT WORK

At times there is difficulty in seeing the problems caused by automation because these problems often stand so close to the advantages of automation. Yet this is an imperative distinction, and one that Illinois leaders are going to have to make in the coming months and years.

In Illinois and across the country, automation rockets production upward while workers leave or shift to still un-automated jobs.

At the Ford Motor Company's engine plant in Cleveland one man now operates a transfer machine performing 500 functions. Before automation this operation took 35 to 70 men. At this same plant it now takes 48 men 20 minutes to make an engine block. Before automation it took 500 men twice as long.

In 1953, the peak year of steel industry employment, 650,206 hourly and salaried workers produced 112 million tons of steel, compared to more than 130 million tons produced by 570,000 in 1966. The reason is not hard to find. Automating phases of steel production has raised employee productivity an average of 4.9 per cent a year since 1961.

### What is the Stress at Floor 100?

Nor are such increases in efficiency and decreases in manpower limited to blue-collar jobs. Professional and managerial employees have felt the competition of machines too.

E. I. Du Pont de Nemours and Company, using a computer, solved a chemical problem in 30 hours that would have taken one man 40 hours a week for 20 years to solve. At the Institute for Advanced Studies a computer works out weather predictions that would take one man with an adding machine three centuries to compute. And using computers, architects and engineers designing the tapering, glass-walled, 100-story John Hancock Center in Chicago solved complex mathematical problems of stress and loads that would have taken years to work out by previous methods.

But the description of automation ingenuity can be endless:

The Boeing Airplane Company and Sperry Phoenix Company have jointly developed a computerized automatic pilot that has landed a 98-passenger Pan American Airways jet with its controls untouched by human hands during the set-down.

Banks now use a computer system which, in less than a tenth of a second, can add your paycheck to your balance, debit payments on your bills, credit your dealers, and post the results. What's more, some banks even have systems that will automatically talk to you when you phone the bank to ask what your balance is.

Automated systems are dispensing cocktails in a London pub and pumping gas from coin-operated gas pumps. And computers are even being used to compose music and write TV dramas.

In one notable area, medicine, automation has made relatively few contributions to date, but even there it is now possible to transmit a patient's electrocardiogram by telephone to a heart specialist in another city so that he can view it and simultaneously advise a physician at the patient's bedside what treatment to administer to the patient.

Still, despite the advances in production and convenience—which are expected and realized goals and the purposes of automation—the problems remain, and they cannot be tolerated.

It is not enough to say that while production has shot up 27 per cent in the highly automated chemical industry, production jobs have slipped only a small three per cent. This is still troublesome job displacement and perhaps unemployment. And the job drop in other industries often has been more serious.

### The Hardest Hit

Auto industry employment fell from a peak of 746,000 in the 1955 boom year to 614,000 in 1962. Despite population growth and a bigger national bread appetite bakery employment fell from 174,000 in 1954 to 163,000 in 1962. Coal mining employment declined 46 percent nationally from 1947 to 1954, and the hardships this has caused Illinois workers is by now a familiar story. In the steel industry too, another major source of jobs in Illinois, further job cuts are expected. For the next decade they are estimated at 100,000 out of a total national steel work force of 600,000.

One of the most difficult aspects of the unemployment problem is the position of the Negro. According to Bennet Hymer, research specialist and economist for the Chicago Urban League who testified before the Commission, Negroes are at a special disadvantage when displaced from their jobs by automation because they lack the skills to get new and better jobs. Only 15 per cent of the Negro labor force is skilled, Hymer reported, while 40 per cent is semi-skilled and 45 per cent, unskilled.

### The Need for Better Job Programs

In its investigation the Commission noted, in particular, the need for job training, new types of training, and the coordination of educational and training programs. The chairman of the Commission, State Rep. Chester P. Majewski, criticized the lack of coordination between governmental agencies concerned with job programs, stating that although the programs may be worthy, there appeared to be too much overlapping. In addition, Commission Secretary William Karp made several observations about the job problem in Illinois:

1. The Manpower Development and Training Act, which deals primarily with displaced workers, is failing to meet the needs of changing industries.
2. The vocational educational system is not keeping up with current needs.
3. Industry is not contributing enough to the retraining of workers displaced by automation.
4. Government agencies are not doing enough to conduct research into new occupational fields.
5. The financing of job programs must be changed so that local authorities can be brought into closer contact with the programs.

Better education and training are two of the major needs identified by the Commission so far as prerequisites to the future economic progress of Illinois. In addition, the Commission says, if Illinois is to continue moving ahead it must:

- Improve the awareness by industry, labor, and government concerning the impact of technological change.
- Improve the state's pace of absorbing scientific and technological innovation.

The Commission, however, has observed some obstacles in stimulating Illinois' awareness of change and speeding its use of innovation.

### Many Losses and a Victory

The Commission believes that a basic problem in speeding the understanding of technological progress, in modernizing education and training, and in metabolizing changes is that: In Illinois information on changing technological events is inadequate. Not enough data are now available. Yet this information must be available or Illinois will not know where it is today or where it is going.

Such introspection and self-knowledge are essential for this state in 1967. For although Illinois is a great industrial state, too little of the new industry in recent years has been coming to Illinois. Instead, this new industry, based on fundamental and applied research, incorporating electronics and other cybernetics applications, and often financed in part by Federal Government contracts, has polarized in Greater Boston, New York City, Colorado, Arizona, and California.

After much concerted action and excellent planning Illinois was fortunate in having the village of Weston chosen in 1966 as the site for the Atomic Energy Commission 200-billion-electron-volt proton accelerator. Attaining this giant project is a long step ahead in Illinois' efforts to keep abreast of technological change. Yet, it is only one step, and myriad technological changes, including automation, are occupying and changing every area of our lives every day.

## Act Now, Live Better Later

The time to act on automation is now, and the action to take is to make of automation a precise and useful tool. Automation will not go away even if we ignore it. Nor should we want to. We have prepared for it through history even though we did not realize where our ages of exploration, conquest, toil, wars, slavery, revolution, scholarship, and dreaming were leading. We have longed for it even when we did not realize the ultimate form our desires for toilless work would take. We have produced the computers and automatic machines. Now they are, in a real sense, waiting for us to use them as they really can be used. If man were to leave this planet tomorrow it would not alter the automation problem (and it might be added, only a little wryly, that the computerized devices might even decide to get along without us).

Wherever our future takes us, whatever we choose to do to enjoy the richest and fullest lives in Illinois and beyond, we have developed automation and its computers, and we will learn how to live with them. We will never, can never, be the same again. Automation presents us with a great opportunity for creating a better and more human civilization for all the citizens of Illinois.

There is danger in automation, but only the danger of doing nothing about it.

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# The Commission Investigates

## Hearings on Meat Packing, Banking, Insurance, Vocational Education, and Manpower Training

House Bill 1310 gave the State of Illinois Commission on Automation and Technological Progress broad power to "Study, investigate, analyze, and assess knowledge, problems, growth, effect, and future tendency of automation and other technological changes . . ."

In pursuance of these goals the Commission conducted a variety of studies, including hearings on the subjects of meat packing, banking, insurance, vocational education, and manpower training. The substance and significance of these hearings is discussed in the following three chapters.

The text of these chapters incorporates abstractions of the witnesses' statements correlated with the question-and-answer dialogue and other pertinent discussions at the hearings that constituted the total proceedings of these meetings.

# 1956-1966:
# Meat Packing Moves Out

## FROM HOG BUTCHER TO HOST FOR A NIGHT

### A Century of Meat Packing in Illinois

Meat packing as a Chicago industry was at its peak during the 1920's, but despite Carl Sandburg's reference to Chicago as "hog butcher for the world," it was never Chicago's only industrial strength, nor was it Chicago's or Illinois' *main* industry. Although a great deal of publicity was given during the late 1950's to the closing of meat-packing plants and the movement of operations out of Chicago by major meat-packing firms, the hog-butcher image of Chicago is not likely to completely disappear in our lifetime.

#### The Making and Fading of a Reputation

What really happened to meat packing in this country, particularly in Chicago and Illinois? Answers to this question were provided to the Commission by John E. Cullerton, Director of Labor for the State of Illinois. He explained that the term "meat packing" came from the early days of the industry, when barreled meat and cured pork products were traded by New England colonists to the West Indies for molasses. As farmers moved westward and livestock production increased, packing houses were established in several cities, including Chicago, which became the biggest packing center because it had the best railroad connections. The railroads were vital not only because they moved the livestock and meat but because they brought labor and raw materials.

From the Civil War through the early 1920's, large-volume integrated plants, processing all species of livestock, cured, canned, and frozen meat, were established in Chicago and other Midwestern areas. These large plants also produced lard, soap, margarine, glue, and gelatin. By the 1920's, Chicago packers were at their peak, slaughtering 21 per cent of the nation's Federally inspected cattle and 19 per cent of the Federally inspected hogs. In contrast, by 1959 no national packer had a Chicago slaughter plant; Chicago's share of the national market had declined to about four per cent in each category.

#### Creeping Obsolescence

The decline of meat packing in large U.S. cities began when their rail transportation advantages were neutralized by the refrigerated motor truck and when advancing technology made their big, aging plants obsolete. Another factor in relocating was the combination of high wage rates in the cities and the ready availability of less costly labor in the small centers because of shrinking employment on farms.

In some cities such advantages urging relocation were offset at first by the sizeable capital investment already made in meat-packing plants, but in Chicago the situation was different. A large number of Chicago's big packing houses became obsolete in a relatively short period of time during the 1950's. It was time to vacate them.

It should be noted here too, that although packing declined in Chicago and other big centers, the decentralization has not drastically altered *regional* patterns. The North Central states region, including Illinois, has retained

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The accompanying chapter consists of abstractions of the testimony presented by the witnesses appearing before the Meat Packing Industry Hearings conducted July 14, 1966, by the State of Illinois Commission on Automation and Technological Progress. The testimony was presented in the Hearing Room, General Offices of the Metropolitan Sanitary District of Greater Chicago, 100 E. Erie St., Chicago, Ill. 60611. NOTE: See Appendix for the list of witnesses.

its predominant position. Plants in this 12-state area processed 59 per cent of the nation's commercial meat output in the three-year period 1960-62, compared to 60 per cent in 1947-49. Federal slaughter data show no major change in the area's share of national output since the early 1920's.

### The Decline is in Workers

What *has* changed drastically is manpower employment in meat-packing plants. This change results mainly from the introduction of technological improvements in newly-constructed, highly-mechanized facilities. Nationally, total employment in meat packing declined by approximately one-fifth in the 10-year period from 1956 to 1965, from 238,000 employees to 189,000 employees.

In Illinois alone, the drop was 45 per cent, from 41,900 to 23,000. In the Chicago area, during this 10-year period, it fell from 35,300 employees to 15,200, a decrease of 57 per cent.

Yet despite labor cuts, the industry's annual meat output rose from 28 billion pounds in 1956 to 31.8 billion pounds in 1965.

Clearly output per man per hour in meat packing rose significantly in this period.

### Helping the Laid-Off Workers

What happened to workers displaced by shutdown of local plants? Only a small percentage of former meat-packing employees were able to locate other jobs *at wages near the levels previously earned*. Why?

Reemployment of these workers was difficult because of their relatively advanced age and lack of education and skill. Some attempts were made at retraining, but a high percentage did not qualify. And even those who were retrained often had difficulty finding jobs related to their training.

In the Chicago area, there were no extensive employer-operated training projects, but when the Manpower Development and Training Act of 1962 (MDTA) was passed by the Congress, funds were made available to retrain unemployed persons. Yet how could MDTA, in 1964, help workers who had been laid off in 1959?

In a survey of applicant files, in March, 1964, it was found that about 1,100 former packing-house employees were registered with the Chicago Area Employment Service Offices. Since approximately 15,000 workers were displaced when major packing firms closed their Chicago plants, we can estimate that considerably more than these 1,100 were still without jobs.

We know that a number found employment in other industries; a significant percentage draw Social Security benefits; and some are on public assistance rolls. Likely, others of the 14,000 left unemployed by the plant closings are no longer in the work force at all, because of retirement age.

### Meat Packing Today

Today the new meat-packing plants are smaller and more specialized than the old plants. They may be located anywhere in the country, but most frequently are near the source of livestock supply, mainly in the Western corn belt. These new plants, such as those recently constructed in Momence, Illinois, Rochelle, Illinois, and Sterling, Illinois are highly mechanized. In these plants a small group of workers can do the same work it used to take hundreds of workers to do—and they do it in less time.

Most of the plants specialize in the slaughtering of one or two species of livestock. Very often, they sell their products directly to supermarkets and multiple outlet food retailers rather than dealing through independent wholesalers.

Meat-packing workers are also among the highest paid in manufacturing establishments. Collective bargaining agreements between the unions and local firms of Illinois include following provisions for: automation funds to assist displaced workers for purposes such as retraining; ninety-day advance notice of a plant shut-down; severance pay; transfer rights to other plants; early retirement; moving allowances; and technological adjustment pay.

Counseling and testing by the Employment Service are available to determine whether employment in other industries is possible, and if MDTA is undertaken, allowances are provided during the training period. Trends in technological developments and their impact are continuously examined by the Illinois Department of Labor, to assure workers are being trained today for jobs that will be available to them for several years.

While all these measures cannot insure completely satisfactory transitions for all employees affected by a shutdown, the odds in favor of such satisfactory adjustment are much better than 10 years ago.

### Still Very Big in Meat Packing

At the same time Chicago has changed its ways in meat packing, the new, streamlined operation of the Chicago stockyards area makes Chicago the foremost livestock distribution center in the world. The old Union Stockyards section of this city has been condensed into about half of what it was at its peak of slaughtering activities. Chicago is no longer "hog butcher for the world," but it is the staging area from which millions of animals march to their places on the country's dinner tables.

## MEAT PACKING UP, MIDWEST DOWN

Illinois No Longer No. 1

"What is happening in the meat-products and meat-packing industry is simply an example of what is happening technologically in many manufacturing industries throughout the country," according to Adolph O. Berger, regional director of the North Central Regional Office of the Bureau of Labor Statistics, U.S. Department of Labor.

Nationally, employment in components of the meat-products industry, including meat packing, reached a high point of approximately 331,000 in 1956, and declined persistently after 1956 to approximately 308,000 in 1965. And from April, 1965 to April, 1966 there also was a slight decline. *All of this decline in the meat-product industry has occurred in the most important component of the group, namely the meat-packing industry.* The Bureau of Labor Statistics national payroll employment data on the meat-packing and other meat-products industry for the period 1958 forward show that employment fell from 215,000 in 1958 to 189,000 in 1965, a decline of approximately 12 per cent.

In 1958, the meat-packing industry had included 67 per cent of all workers engaged in the meat-products industry group, but by 1965, it had declined to 61 per cent. During April, 1965 to April, 1966, there was a further decline of more than three per cent.

### Meanwhile, Expansion in Sausage and Poultry

At the same time the two other much smaller industries in the meat-products group, sausage and other prepared meat products and poultry and small-game dressing, have both increased in employment. The sausage and other-prepared-meat-products industry rose from 44,000 employees in 1958 to 50,000 in 1965. During 1965-66, employment declined slightly; the overall increase since 1960 has amounted to more than 1,000 workers.

In the poultry and small-game dressing industry, employment for 1958 to 1965 has climbed from about 60,000 to about 69,000, most of this occurring during and prior to 1962.

All Midwestern states included in our reports except Ohio had net declines in meat-products industry employment during 1947-1965. The decreases were six per cent in Iowa; 14 per cent in Nebraska; 52 per cent in Kansas; and 53 per cent in Illinois. Only in Ohio did meat-products employment climb; the increase was four per cent.

Despite falling employment in these major states, however, there was a national rise of about 12 per cent in meat-products employment. Other states had experienced relatively large increases in meat-packing-industry employment, specifically during 1956 to 1963.

With the exception of South Dakota and Utah, all states in the Northeast, North Central, and Western sections of the country had falling employment in the meat-packing industry during January, 1956 to January, 1963. In the South, however, seven of the 13 included states had employment *increases*, ranging from three per cent in Alabama to 45 per cent in Mississippi.

### What Happened in Illinois?

In spite of the relatively large decline in Midwest meat-packing employment during 1956-63, the proportion of the industry concentrated in the North Central states has declined only from 59.8 per cent to 57.5 per cent. At the same time, in some individual states the relative decline was much larger. In Illinois, which in 1963 lost its rank as the first state in meat packing, the decline was from 12 per cent of the national total to approximately 7.2 per cent.

## FINDING THE BENEFITS IN PROGRESS

### Can Workers Share in the Advances they Help Produce?

In the 1920's Chicago accounted for about 20 per cent of the nation's employment in meat packing. By 1939, Chicago's share was down to 15 per cent, and currently it is less than five per cent.

Such statistics as these must be the starting point for any review of the changing Chicago and Illinois meat-packing industry, in the opinion of James Wishart and Glenn Snyder of the Amalgamated Meat Cutters and Butcher Workmen of North America, AFL-CIO. Mr. Wishart is research director of the Union, and Mr. Snyder, a 30-year veteran of the industry, is in the Union's Meat Packing Department.

The employment decline was from roughly 30,000 workers in 1929, to 28,000 in 1939, and to roughly 11,000 in 1963. These figures represent basic meat packing, that is, the slaughtering plants, the processing plants, and also the poultry industry. Today in the Chicago area there are roughly three workers employed in processing for every one employed in basic slaughtering. Processing includes the production of such items as sausage, corned beef, and prepared meats.

### Trucks, Taxes, and Face-to-Face Buying

As previous witnesses have indicated, the basic reason for the change in the meat-packing industry has been the refrigerated motor truck. These big highway refrigerators freed the industry from dependence on rail yards, terminals, and other costly, large-scale permanent railroad installations. The trucks also made it possible to locate plants in the countryside with immediate access to livestock supply, and to save money on animal transport by shipping the lighter, more compact carcass meat rather than live animals.

In addition to the trucks, other causes for the shift of meat packing out of the large cities have been various state policies such as: concessions on financing plants and writing tax free bonds; liberation from community tax responsibilities; and the providing of services and accommodations to attract plants. All of these have added a certain additional synthetic economic energy to the basic economic pressures that have pushed and pulled meat packers to the outlying areas.

But the meat-packing decline in the big cities indicates something else too. It reflects also the tendency of the industry to do its buying more and more on the basis of direct negotiation with farmers or through county auctions. In 1963 only about 36 per cent of the cattle were siphoned through terminal markets to major producers, compared to 70 per cent only a few years before.

### No Cause for Relocation

Yet the corn belt, including Illinois, continues to be, and I think is increasing to be, the primary sector for the slaughtering of livestock in the United States. The construction of new plants across Illinois by Swift, Oscar Mayer, Armour, and Agar shows this.

Illinois employment in the meat industry now is approximately 20,000 (mid-1966). There may be some increase in that, though probably nothing sensational since the increased number of plants is being offset constantly by the higher rate of man-hour productivity.

According to Messrs. Wishart and Snyder it is not true that wage rate differentials were any significant factor in the geographical relocation of the meat-packing industry. The two unions in the industry, the Meat Cutters and the Packing House Workers, have established for all national packers a uniform national rate structure, so that wages paid by a firm in one city are the same as in another. In terms of the policy of national packers, then, there is no basis for saying that differences in wage or contract benefits caused relocation.

### Seniority and Benefits Go Along

The Meat Cutters' Union agreements and those worked out through the Automation Fund Committee helped considerably in the Sioux City lay-offs. At the time of the closing of the Sioux City plant and shortly thereafter, Armour opened new plants in West Point, Neb., Worthington, Minn., Emporia, Kans., and in Sterling, Ill. More than 20 per cent of the displaced Sioux City workers transferred to these plants, retaining their seniority rights and full benefits.

In addition to the interplant transfer provision in the Meat Cutters' master agreements, the Union also negotiated a number of other benefits on the basis of studies and investigations and surveys by the Armour Automation Committee:

- Improved severance pay.
- Special pension benefit under which workers, older than 55, with 20 years' service, who are laid off by plant or department closing, receive a pension at 50 per cent above the normal pension rate then in effect, up to age 65, at which age Social Security goes into effect.
- Vesting provision, making pensions fully vested for any worker separated after 10 years of service, even though he may have received separation pay. At 65, he collects the pension he is entitled to by his actual years with the company.

Also, according to this contract, Armour is required to give 90 days' advance notice before closing a plant or a major department of a plant, and all workers on the payroll at that time are, in a sense, guaranteed steady work for the 90 days. If they are laid off at the end of 60 days, Armour then has to pay the employees for the remaining 30 days. This is the kind of agreement that is easier to negotiate with a major multi-plant corporation than a single-plant company simply because a small firm going out of business usually does not have very much in the treasury.

The possibility of establishing a displaced-workers' fund with contributions from all members of an association represents a real prospect for future development.

### Armour Automation Fund Surveys

The impetus for the Armour Automation Fund came from the closing of six major plants by Armour and Co. early in 1959. Almost 7,000 employees with an average service of about 20 years were displaced with 30 days' notice. This catastrophic event developed a good deal of pressure among the workers.

The proposal for the formation of the Armour Automation Fund Committee came in an effort by the Company to meet these pressures and to provide some help for the thousands of unemployed.

### Hardest for Women, Older Workers, Non-Whites

One of the Armour Automation Fund Committee's first jobs was to survey the men and women who had been laid off in the early part of 1959 from three Armour plants, including one in East St. Louis, Ill.

The East St. Louis survey results showed

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NOTE: Management has resisted proposals for advance notice of plant closings. One of management's claims has been that if the workers know the plant is going to close there will be sudden collapse of morale. Studies done by Dr. Arnold Weber for the Automation Committee indicate that it is not true. On the contrary, it appears that when the three-month notice goes up there is a tendency for efficiency to increase for this period.

that 13 months after the plant closed, 57 per cent of the workers had found no new employment. The results indicated that the heaviest concentration of unemployment was among older workers, women, and non-white workers. The surveys also showed a fairly low level of formal education; an average wage for new jobs of $1.86 an hour compared to more than $2.20 at Armour; and, for practical purposes, totally ineffective functioning of the employment services. *No more than 13 per cent of those who found new jobs had had any form of practical assistance from the employment agencies.*

### Retraining Helps Only a Few

The Committee concluded from its studies and surveys that retraining is effective for a fairly small percentage of workers. It will increase somewhat their power to compete with other unemployed workers in the labor market. But the researchers questioned whether retraining by itself, even for skilled workers, creates new jobs where none existed before. More and more in our changing economy the need for employees is concentrated in such highly-skilled occupations as computer programmer, mathematician, and other new jobs.

### A Mythical Demand for Skill

The Automation Committee discovered also that the anticipated increase in demand for skill in the packing-house industry as automation progresses was mythical and unreal. Instead, the impact of automation was to reduce skill requirements on jobs, to make those jobs simpler and more easily learned than they had been before.

True, where automated and other mechanized equipment was introduced, there was an increase in the demand for such skilled occupations as electronics repairmen, but this represented only a small fraction of a per cent of the total labor force.

### Conclusions on the Effects of Automation

Automation, at least as indicated by its impact on the packing-house industry, has the effect of *reducing* the total demand for human skill and experience in the production process.

In reaching its general conclusions there was some disagreement among the three sectors of the Automation Fund Committee, union, company, and the public members. There were, however, some points of consensus:

1. When labor and management are unable to solve a problem, government must take the initiative.

2. To prevent automation from causing great suffering there must be growth in goods and services produced.

3. The employment services need revitalization.

Also, there were suggestions made by the Armour Automation Fund Committee for government taking initiative in the area of retraining, which later were embodied in law with certain modifications.

### The Unadvertised Costs of Automation

The conclusion of the labor members of the Committee was that although automation brings certain social rewards, it also has unadvertised costs in human suffering and human dislocation and community loss that go far beyond any imagined by professors of economics or executives of major corporations.

### What Programs Really Help Displaced Workers?

The interplant transfer system has been successful only in the case of workers displaced at one or two plants. For example, following the closing of one plant in Chicago by a major company, transfers to another Chicago plant were offered to the workers. The more popular choice there, however, was to take severance pay instead of a transfer, even though the long-range outlook for the worker accepting severance pay at an age of forty-five or more and leaving the firm obviously was less favorable than for the worker transferring to another job with the same company in roughly the same area. One conclusion is that after a good number of years in the packing house, workers look with relief toward some other form of employment. Also, people want to stay in their old neighborhoods with their friends, close to familiar associations.

Workers who don't want to transfer may seek help from an employment service, as noted previously. And despite their sometimes less than perfect performance, these services have been genuinely helpful in specific instances. In Ft. Worth and in Sioux City the employment services set up special task forces to find jobs for the displaced Armour employees, and their performance showed improvement. But the employment services are still hampered by employers' failure to notify the services of their needs.

### What is the Aptitude of Aptitude Tests?

As for retraining, the Automation Committee did not find any sharp correlation between age and learning ability. The Committee did find that aptitude tests do not necessarily indicate an individual's ability. In Oklahoma City, where workers at first were deprived of retraining if they failed to make a good score on the employment service's aptitude tests, the Committee later changed its approach and said, "Come one, come all. Whether you pass the aptitude tests with flying colors or flunk you can have the retraining."

When the bars were let down in this way, the job results were just as good as when employees were placed according to the tests.

Age does appear to be a significant factor in reemployment. The resistance of employees to the 45-year-old displaced worker is considerable. The only exception to this point is the worker with special craft skills. The Committee found that the maintenance people, the electricians, the millwrights from closed plants located employment very readily without regard to age.

### Yes, We Have No Bonanzas

A panoramic view of the meat-packing industry today would show a rather dismal landscape of declining employment and a growing economic squeeze—caused by pressures on one hand from the customers, such as the major food chains, and pressures on the other hand caused by the uncertainties and vagaries affecting price structure and the livestock business.

In terms of profits, Armour, Swift, and Wilson are among the more profitable producers in the industry, but small firms with full-line plant, such as Rath and Cudahy, have had substantial losses. Profits in the meat-packing industry tend to follow cyclical patterns. When livestock supplies are short and prices are up, the packers claim that they operate at a loss. In periods of surplus livestock, when the prices paid by the packers for animals go down, the packers cover the costs and add to profits. The rate of profit return on net worth in the industry is about eight to nine per cent, hardly a bonanza in American business currently with its average current profit return of about 10 per cent.

### Giant Packers vs. Behemoth Food Chains

The basic problem of the meat-packing industry is exemplified by the lesser position in the total scale of U. S. industry occupied now by the big four packers. Big as they are, they no longer have the decisive economic power they possessed in the early part of the 20th Century. And they are now contending with even larger economic forces than they themselves possess, the major food chains.

### Unemployment Isn't Being Eaten Away

But the basic problem in terms of unemployment is that the increase in demand for meat is fairly limited, only slightly greater than the increase in population. The consumption of meat per capita is currently about 160 pounds a year. The most rapid per capita increase has been in the consumption of poultry; pork and lamb have slacked off.

With productivity advancing as it has, at a rate of about five per cent a year, and consumption increasing at a rate of less than two per cent, it is inevitable that industry employment will fall. Currently about 5,000 jobs a year are eliminated from the industry. (Concerning Mr. Adolph O. Berger's statement in the second section, "Meat Packing Up, Midwest Down," that Southern meat-packing employment is *up,* this is an increase in the Southern poultry industry. There actually has been a slight *decline* in the total sector of the non-poultry U. S. meat-packing industry represented by the South.)

### Possibilities for Legislation

The proposal for increasing unemployment compensation should be underlined. From the Union's point of view, more constructive Federal standards are needed. The Meat Cutters recognize that there is a certain competition among the 48 states of the Continental United States in securing new plants, in bringing new employers into the state. For this reason, it seems that the Federal approach is needed to expedite the solution of these problems.

Also, wage-hour legislation could provide a very effective minimum floor, and by establishing a uniform coverage for all employers, could create more favorable conditions for the Union's employment and wage objectives. Such legislation could have very great, long-range potential value.

### Where There's a Need There's a Way

Government has a responsibility to fill in where private industry fails to provide employment. Perhaps that help may come in the form of encouragement for a more rapid increase in gross national products; or government inter-assistance in subsidizing projects which would give direct employment to the unemployed; the negative income tax principle, which Professor Friedman of the University of Chicago has suggested as one means of providing income for those who have lost income through technological change (the worker receiving *less* than a certain annual income for his work would receive, from the government, a *positive* number of dollars to bring him up to, say, a poverty level).

### Rewarded With a Pay Cut

Union policy recognizes technological progress cannot be opposed. But we don't propose that the man on the job should suffer a cut in his wages as a reward for the technological progress to which he himself, as a worker, often has contributed.

## A CHOICE OF LIVELIHOOD AND CORPORATE ECONOMICS

### The Union Isn't Negative but Concerned

A labor union, Mr. Kerry Nauk told the Commission, is more concerned with employment than with sales and profit. Mr. Napuk is research director of the United Packing House, Food & Allied Workers of America, AFL-CIO. This concern is only natural, for its members are jobholders; and they cease to be either when a plant closes. The union's policy toward technological change is not a negative one, but one of concern for the future of the workers.

Change in meat packing has come from general technological developments, such as refrigeration systems, trucks, and highways, and from internal developments within the meat-packing industry, such as new production methods and machines. But it is notable that labor cost also played a minor role in the change that shifted the packing industry from the city to the countryside.

Today the wage cost of producing a pound of meat is a little more than three cents. Compared to the wholesale cost of a pound of meat this labor cost is a small factor. There is some disagreement between union and management on the importance of labor costs in this shift to decentralization, but the union contends that the major packers would have found it infeasible to maintain existing centralized operations *even if urban workers had been willing to accept sizeable wage cuts.*

### Progress Brings the Wiener Stuffer

The assembly line method of production, originally introduced in the early 1900's, underwent far-reaching change through the years. The conventional on-the-bed system, where the carcass is processed by groups of men moving from one animal to another, was a significant improvement. But, the on-the-rail dressing system, which moved the carcass along a line while the men remained stationary, was a much more important refinement. In many cases, the Can-Pak system doubled the number of heads slaughtered in an hour, while often reducing the gang lineup by a third.

Mechanical equipment also boosted production. Power tools, such as the Wizzard Electric Knife and electric sawing devices, increased productivity in skinning, dressing, and trimming livestock. The mechanical ham pumper made ham curing efficient. Sausage and luncheon meat are now mass produced by machines that measure, grind, blend, and mix the ingredients; other machines stuff, seal, or link sausage and package it.

Wiener production jumped considerably with the introduction of the Frank-O-Matic system which mixes ingredients, stuffs casings, skins the casings, and then packs and labels the final product. It is not uncommon now to find 12 employees doing the work formerly done by 175 people.

In short, there have been significant changes in almost all operations associated with the cutting, slicing, wrapping and packaging of meat products, not to mention the improvements in materials handling with the utilization of tractors and conveyor systems.

### Decline and Fall and Increase

The effects of these developments are best expressed in a few simple but startling national statistics:

First, between 1956, the year these major closings began, and 1965, *production worker employment* plunged by 22.3 per cent, from 187,600 to 145,800 workers. Second, manhours fell from 418.5 million, in 1956, to 311.6 million in 1965, a decline of 25.6 per cent. Third, output per man per hour jumped from 63.7 pounds per man per hour in 1956 to 98.3 pounds in 1965, an increase of 34.6 pounds per man. Fourth, the productivity index since 1956 shows an amazing increase of 54.3 per cent, with an 8.9-per cent boost in 1965 alone. Fifth, direct wage cost per pound of meat continued its downward trend, falling to 3.12 cents per pound in 1965. This was 4.6 per cent below the 1956 level.

In other words, more than a fifth *fewer* workers were producing about a fifth *more* meat, with each worker turning out 54.3 per cent more meat per hour at four per cent lower wage cost per pound of meat. There are very few other industries that can match this degree of advance in such a short period of time (1956-1965).

### Closing the Plants

Between 1952 and 1964, 12,993 packing house workers, who were members of the union, lost their jobs in Chicago. Five local plants closed, throwing 741 workers out of jobs.

Yet the major displacements that occurred resulted from layoffs that started as temporary but became permanent. Five firms, including Wilson and Co., Swift and Co., and Armour and Co., displaced 11,722 men and women during this period.

Between 1956 and 1964, one company, Armour, closed more than 16 plants that formerly had employed 12,951 people.

Even today, these closings continue. Since January, 1966 the union has had notice of three plants closing, two in Denver, Colo. and in Evansville, Ind., that involved 400 workers in each plant. Just recently it received notice of the closing of the Hygrade Food Products plant in Indianapolis, Ind. which employs more than 2,000 workers.

### The Only Concrete Study of Automation Displacees

As noted previously, production employment fell by 22.3 per cent between 1956 and 1965, leaving 41,800 men and women without jobs. Also, as noted, 12,993 workers were displaced in Chicago alone.

What happened to these people? This subject has been discussed earlier, but the studies conducted under the Armour Automation Fund agreement in 1959 may throw some light on it.

This was a fund of half a million dollars set up after the close-downs. It has provided the only concrete studies of what has happened to workers displaced by technological change.

With the displacement of over 5,000 workers in six different plants during 1959, it was discovered that the workers in half the plants under investigation were, for the most part, (a) older than 45, (b) unemployed for periods ranging from four months to six months, one year after the closing, and (c) were plagued by a lack of skills and a low level of education. These factors made their reemployment quite difficult. Further, the period 1956 through 1961 was a time of very high general levels of unemployment, and this compounded the problem, especially for unskilled workers. Retraining can be most helpful, a) if there is a high employment level and, b) if the workers are young and have had a certain degree of education already.

### Not Enough Had Aptitude

In theory a displaced meat-packing worker *of sufficient aptitude* could be retrained for many skilled specialties such as general machine operator, heavy equipment operator, practical nurse, barber, clothing presser, or auto repairman. Not enough of the meat-packing unemployed, however, had aptitude for such work.

Placement levels ran at only about 80 per cent. Greater achievements were made in the transfer program, but most workers displayed a great reluctance to move from family and friends.

What, then, happened to these thousands of workers?

### Out of Meat Packing . . . and Down

The vast majority left meat packing. After a period of severe economic hardship, they usually found a job, but, more often than not, at less pay. Some of the fund studies indicated a differential between the new and old jobs of 50 cents an hour or roughly $1,000 a year. Severance pay offered temporary help but could hardly make up for the loss of income produced by working at a lower-paying job for the rest of the worker's laboring life.

The fact that a severance pay plan was negotiated prior to the mass closings indicates that the union had some advance indications of the shutdowns. But there has not been much discussion of collective bargaining agreements to handle future difficulties that might arise.

Some feel that as long as there are multi-story meat-packing plants, a type now considered obsolete, there are going to be further close-downs. There are a number of large plants of this type now employing about 3,000 workers in each plant.

Some major firms—the two largest companies in the industry—are diversifying. One has more than half its assets *out of meat packing altogether*. At the same time, while these meat packers are diversifying, they are building full-line processing and slaughtering operations, which again, are multi-story structures. But other companies are building one-story, efficient, modern operations. Some of these new efficient plants are specializing in certain specific functions or operations in the meat-packing process.

Iowa Beef, for instance, is a large independent company in Iowa that does nothing but slaughter cattle and ship carcasses for other companies. Some hog companies are doing nothing but slaughtering for other processors who once did the slaughtering themselves. In short, there is movement and change of many kinds in meat packing today.

### Let the Federal Government Do the Hiring

The bitter experience in meat packing, states Mr. Napuk, illustrates the more ruinous aspects of technological change, and this experience vividly demonstrates the toll in human resources. It is both a sad and tragic picture. Yet, what is most tragic of all is that it need not have been so. Says Mr. Napuk:

"If the companies involved had not equated progress with profits, there would not have been as much hardship.

"If the Federal government—the only public institution in the position to introduce a program for an industry as a whole—had accepted responsibility for the welfare of these people, the burden would have been lessened. But the Federal government could not accept this responsibility with existing laws.

The Federal government should very seriously consider the proposition of becoming the employer of last resort, in the sense that if a worker is displaced then the Federal government accepts the responsibility of hiring that man as an employee. . . ."

### Suffering is Not Progress

As meat-packing unemployment mounted it became apparent that the problem was too big for just the parties directly involved. Company and union could soften the blow, but only temporarily. The union did negotiate a severance pay provision in the contract, providing each worker with two weeks' pay per year of seniority, and it did arrange for a transfer program with the cost of the move to be borne by the company.

Mr. Napuk stated that his union has a responsibility to negotiate with the company to cushion any blow that results from displacement in terms of separation pay, transfer arrangements, and pensions.

Mr. Napuk adds:

"Cooperation between company, union, and government can ameliorate the hardships that workers suffer in a period of rapid technological change. In any event, failure to consider the worker is hardly any form of progress.

"Yet, in the final analysis, it comes back to this matter of values. What is worth more to the American society, a worker's livelihood and his family's welfare, or corporate profits?"

## HELP FOR THE DISPLACED WORKER

### Is There Aid, Is It Accepted?

Problems of displacement in the meat-packing industry can be described as severe, compared to labor adjustment generally, in the view of Dr. Arnold Weber.

Dr. Weber, who is professor of industrial relations at the Graduate School of Business, University of Chicago, discussed some of the steps taken to ease the effects of this severity. For about six years he and others have been intimately associated with the projects and operations of the automation group to which Mr. Kerry Napuk alluded in his testimony (preceding section). This is the Automation Fund Committee established by Armour and Co. in conjunction with the United Packing House, *Food & Allied* Workers of America, AFL-CIO, and the Amalgamated Meat Cutters and Butcher Workmen of North America, AFL-CIO.

He and others carried out various research projects for the Committee and administered retraining and placement programs for displaced workers of Armour and Co. in Ft. Worth, Tex. and Sioux City, Iowa. In this capacity, Dr. Weber explained, he had become an expert, "on abandoned meat-packing plants!"

#### One Penny for Retraining Etc.

The Automation Fund Committee was established as a result of a collective bargaining agreement between the Amalgamated Meat Cutters and Butcher Workmen and the United Packing House Workers and the Armour company. The contract was negotiated in 1960; its terms were that Armour agreed to put one penny per hundred weight of livestock kill into a fund, up to a maximum of $500,000. This fund was to be used for financing retraining, conducting studies, engaging in placement campaigns, and any other steps deemed helpful.

As of the time of the meat-packing hearings in mid-July, 1966, the fund had been involved in four relatively major projects, but still amounted to about $140,000. The Chairman of the fund is Clark Kerr, former president of the University of California, and the co-chairman is George Schultz, dean of the Graduate School of Business, University of Chicago.

The fund was set up in anticipation of possible work interruptions and in realization that when the previous shutdowns had taken place in Chicago, East St. Louis, Columbus, Ohio, and in North Dakota, union and management had been without apparatus and money to deal with unemployment on a special project basis. It was a non-governmental agreement, arranged jointly by the unions and the management.

#### A Tale of Four Cities

Dr. Weber's experience with the Automation Fund covered four cities where Armour employees experienced major shutdowns, Oklahoma City, Okla., Ft. Worth, Tex., Sioux City, Iowa, and Kansas City, Kans.

The average age of the worker in the four cities was about 48, and the average educational level, eighth grade. There was a high component of members of minority groups, including Negroes and Latin-Americans in Fort Worth; American Indians in Sioux City; and Negroes in Kansas City.

Most meat-packing workers have had a long attachment to the industry. The average employment term is 14 years, but for many it totals more than 20. As noted already, displacement forced them into an open labor market that for many was hostile and unknown territory. Yet this is a message of hope rather than despair in their experience. The progressive activities of the Automation Fund Committee do *not* indicate that you can undo the disturbance and inconvenience done to the lives of the displaced workers in any broad sense of equity. But the Committee did find that there are policies and administrative devices open to the private parties and to governmental agencies that can ameliorate the condition of the displaced worker. Progress made in dealing with some of these problems is shown by the following figures:

The first project initiated by this joint union-management Fund was in Oklahoma City. There, about 14 per cent of the total 450 displaced workers were helped by various remedial programs such as retraining for placement in new jobs and efforts at transferring to other plants. The Oklahoma City program was the least successful, but it was the least successful because it was the most experimental.

The Ft. Worth shutdown in 1962 involved 1,200 workers. Thirty-six per cent eventually were helped to find jobs through the Committee's representative in Ft. Worth, and some of them were able to transfer to other plants, although this number was negligible.

The next shutdown, in Sioux City, Iowa, in 1964, also involved 1,200 people, and there the Automation Committee helped 60 per cent make adjustments.

It should be understood that these figures don't indicate that all these workers are living in clover; that they are all at the same economic level as before their lay-offs. But the figures do show that they entered training programs or found jobs through the efforts of the Committee, or the collaborative efforts of the Public Employment Service, or that they transferred to other plants under the provision of an interplant transfer agreement negotiated in the early '60's.

In Ft. Worth, 165 people eventually entered training, and 150 finished, indicating a dropout rate of only little more than 10 per cent, which is only about half the dropout rate for MDTA programs. For those who finished training, the unemployment rate three months to a year after their training was around five per cent, compared to a rate of 28 per cent for displaced workers of similar age, race, sex, etc., who hadn't taken the retraining.

In Sioux City, there were ultimately 156 trainees and 126 eventually finished. As of early 1965, the unemployment rate of the retrainees was 10 per cent, but this in part reflected the narrow limits of the Sioux City labor market.

These aggregate figures, showing the percentage of workers helped ranging from 14 to 60 per cent, may be no reason for rejoicing, but at least there is some basis for the feeling that by applying resources and planning the displaced worker can be helped.

### Flop in Ft. Worth, Bird in the Hand

The importance of a little administrative imagination combined with the willingness of the parties to experiment is shown by Armour's experience with the interplant transfer plan. This plan, negotiated by the union management, specifies that workers displaced from a plant because of a shutdown have a right to bid into jobs in other plants, as of a given seniority date. The worker can't displace somebody who was on the job before that date, so, in effect, the displaced employee is exercising the right to bid in jobs that were held by people who were employed subsequent to that date.

The first major attempt to apply this transfer plan was in Ft. Worth. Of about 1,000 workers who were eligible only two transferred. Certainly this seemed to be a magnificent flop. Many factors, to be sure, were involved in this failure as shown by the following observations:

The positions that were available were in Northern cities, and many of the Texans were reluctant to move. Also, the accumulated seniority base that the employees had in their positions at the new plant was amenable at that time, and they were concerned that they might be bumped out if there was a cutback there too. But the most important finding was that the employees were unwilling to transfer because they were uncertain about the nature of the jobs in the new plant. And if the worker accepted a transfer, he forfeited his severance pay which, in Ft. Worth, averaged around $2,800 because of the high seniority level there. There was, thus, a bird-in-the-hand notion that kept people from pursuing the bird in the bush in other cities.

In Sioux City an experimental change was made in the program. When a person transferred to a new plant, he had a six-months' trial period, during which he could decide to stay or go back to his original lay-off status, and he could do this without jeopardizing his claim to severance pay.

A total of 400 initially applied for transfer in Sioux City and of this group, 240 did transfer and stayed at their new jobs. A follow-up study indicated that their adjustment was relatively easy. And this much higher proportion who transferred accounts, in turn, for the lower proportion of people in Sioux City who took retraining.

Again, these results show that although it may not be possible to achieve complete equity, the combined efforts of management, unions, and public bodies can help.

### Compensate and Educate

Concerning displacement and steps to mitigate its effects there are several problems or policy issues that might fall within the broad purview of such a legislative group as the Commission on Automation and Technological Progress.

First, adequate advance notice of shutdown or displacement is important in the success of any adjustment program.

In the early shutdowns in Chicago, East St. Louis, Ill., and Columbus, Ohio, there was no advance-notice provision in the contract calling for mandatory advance notice by the company of an impending shutdown. By contrast, in Ft. Worth, in Sioux City, in Kansas City, the company had a 90-day contractual obligation to notify employees of a shutdown.

In Dr. Weber's view there should be a law making it obligatory for all employees of more than "X-number" of employees to notify their employees and the Public Employment Service when they are going to lay off a certain percentage of their labor force. Such a law would require the employer to pay the workers in lieu of advance notice—this would be a notice of 30 to 90 days, not just the seven days generally stipulated in collective bargaining agreements.

The purpose of such a law would not be to penalize or impose an added cost on management, but to create an incentive for management to engage in advance planning.

### Education is Not an Easy Thing

The second factor that is very important and within the province of the state governments is the need for adequate vocational education facilities.

Ft. Worth, Tex. had good vocational education facilities, but they were segregated, and the Negroes couldn't use them. This undermined the effectiveness of the program at that time. In Sioux City, there was no segregation, but there were no facilities. The local people, who were very conservative in a political sense, would not accept Federal money, and so many of the programs that should have been implemented through the local public school system were not. It literally was 14 months between the time the Federal government allocated $70,000 for a training course in automobile mechanics and the time that the course actually started in Sioux City. During this period half the interested workers had taken menial jobs with little vocational content and with little economic potential.

### Space Industry for Whites, Shoe Repair for Negroes

A third factor is the need for effective labor market information and counseling. Many displaced workers don't know what jobs are available, or how to find one. The success of the Public Employment Service in helping workers depends on the quality of the local employment service counselors. In Ft. Worth the counselors *were not* knowledgeable, and their advice reflected the racial bias in that labor market. The result of this bias was that Negroes inevitably were exhorted to go into shoe repair or poultry slaughtering, and the whites into electronics and space industries.

To help displaced workers, then, the states can help greatly by providing well-informed, professional employment counselors, perhaps on a rotating basis throughout the state.

The fourth factor to be considered in possible corrective legislation concerns the adequacy of financial benefits for retraining.

Workers in retraining programs are paid benefits that generally are pegged to the Unemployment Compensation levels prevailing in the state. Also, they receive a stipend from Federal funds. The question is, do they get enough to live on?

Many of us suffer from the puritanical notion that a person shouldn't be too well compensated while he is training because he really isn't "working." Yet this argument appears faulty. For one thing, experience indicates that the lower the level of benefit, the higher the dropout rate. In addition, perhaps we can benefit by the example of other nations far less affluent than ours. Trainees in French and Belgian government-sponsored retraining programs get 80 and 90 percent of their previous earnings. By contrast, in Illinois and other states, compensation is only 20 or 30 per cent.

### Speed, Dollars, Compassion, and MDTA All Help

A point to mention is the need to cut bureaucratic red tape. To paraphrase the old saying, "Help delayed is help denied." Time after time, in all the four states, Kansas, Texas, Iowa, and Oklahoma, the funds were available, the intentions were there, but there were unconscionable delays in carrying these things out. The capacity to react quickly in such crises as they develop is essential if the workers and their families are to be helped at all.

Has there been an effective sharing of the problems of worker displacement by the various responsible parties in the U. S. socio-economic-political structure—by management labor, and government?

It would appear that there has been an increasing awareness of responsibility in this area. Management and unions have been trying to do more, even if not out of compassion. Often the critical consideration seems to be, "Who is going to assume the costs?" At the same time it probably also is true management often has been motivated by compassion. And unions, for their part, sometimes have been diligent in confronting management with the alternative of more help for the workers or the threat of strikes or some other form of labor disturbance. And since 1962 there has been a revolution in the activities of the Federal government regarding the problems of technical change. The law and program implemented by passage of the Manpower Development and Training Act in 1962 have been amended three times since, each time allocating more money and strengthening the program one way or another.

### Paying the Cost of Lost Jobs

Is it conceivable that a union and a company could work out a package of financial aid that could stand the costs of worker displacement?

If you take 50 cents an hour from management to help the displaced workers, this obviously is going to affect what happens to other economic issues, but it does not seem reasonable to expect that prior parties can handle the costs of all of these problems. Federal resources must be available. And coming to the states, they certainly should be capable of providing (a) good vocational education facilities, perhaps assisted by Federal funds from the Vocational Education Act of 1964, (b) good employment counseling, and (c) fast action in bringing aid to displaced workers.

## THE PACKERS GO, THE STOCKYARDS STAY

### Chicago's Union Stockyards are Smaller but Streamlined

Although automation in packing houses has cut down the number of employees needed to process meat, automation itself has not appeared on the stockyards scene. Its effects have been felt, however, at the Union Stockyards.

How the departure of major packers from Chicago affected Chicago's famed Union Stockyards was reported by Larry Caine, director of public relations for the Union Stockyard and Transit Company, Chicago.

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NOTE: An interesting sidelight on the financial adjustments made by displaced employees is the disposition of the rather generous severance pay received by workers released from Armour and Company in one cutback. These wages went as high as $6,000. A survey showed, however, that more than 50 per cent of this pay was spent on the immediate repayment of debts, and the primary claimant of these debts was the Armour employees Credit Union.

The Union Stockyard and Transit Company owns and operates the Union Stockyards which are Chicago's public livestock market for trading on cattle, hogs, and sheep. It is in no way involved in the slaughter of livestock but is a market only. The yards today are shrunk to half their former size but for a hundred years the Union Stockyard and Transit Company maintained the largest hotel in Chicago for cattle, hogs, and sheep. During 96 of these 100 years, Chicago was the largest livestock terminal market in the United States. Now, besides the Stockyard Company, which provides the basic facilities for trading on livestock, there are 41 commissioned livestock firms on the Chicago market, representing livestock producers all across the nation who consign their livestock to Chicago. These 41 firms employ approximately 250 people, and there also are another 237 registered buyers on the Chicago market.

### A Shift from Slaughter to Shipping

The complexion of the Chicago stockyards has changed drastically in the past eight years, following the exodus of the major packers, Armour, Swift, and Wilson.

Prior to 1950, 65 per cent of the cattle, 80 per cent of the hogs, and 50 per cent of the sheep and lambs slaughtered in the United States were slaughtered within the immediate stockyards area. In 1959, after the big packers had closed their operations and decentralized, the percentages had slipped to only 33 per cent of the cattle and 60 per cent of the hogs. By 1964 it was only 22 per cent of the cattle and 33 per cent of the hogs.

Today there are 12 slaughtering plants in the Union Stockyards area, including such firms as the Lincoln Meat Company, Illinois Packing Company, Reliable Packing Company, American Meat Company, and Chiappetti Packing Company—none of the major firms. What has happened is that the Chicago Stockyards have gone through a transition from a slaughter market to a shipping market.

### Building a Better Stockyards

In line with this transition the Union Stockyards and Transit Company in 1960 began a modernization program to consolidate operations and make the yards more efficient. Approximately 400 cattle pens, the rail-shipping division, and the hog-selling facilities in the 75-acre tract north of Exchange Avenue were totally demolished. Concurrently in the south area of the yards, the Company built a comparable number of cattle pens, a new steel-and-concrete hog-selling facility, and a modern rail-shipping division capable of setting 120 fifty-foot rail cars.

### Never a Plan to Close the Stockyards

The officers and directors of the Union Stockyard and Transit Company, contrary to some of the publicity at that time, at no time considered closing the Chicago stockyards. Instead, they began a campaign to uphold the basic competitive price-basing factor of a public livestock market, namely establishing fair values for livestock.

Chicago was, at that time, and still is one of the basic livestock markets in the United States relative to establishing fair values for livestock, no matter where it is sold. To compensate for the loss of buying power after the exodus of the big packers, Eastern and Southeastern packers were contacted to procure their orders for livestock to the Chicago market. One of the outstanding advantages that Chicago offers is the finest transportation facilities of any marketplace in the United States. Chicago is the largest market adjacent to the Eastern segment of the U. S. with its two-thirds of the nation's population.

### Not Automation but Streamlining

Automation, as such, has not been introduced into the yards, but its effects have affected the Company's employment. In 1957, the Stockyards had a total of 385 employees. As of mid-1966 there were 193.

At the time of the major shutdowns, there was no economic injury to the Union Stockyard and Transit Company, but the economic hurt has come since then as the packers have funneled livestock away from Chicago directly to their plants. We did not originally anticipate that they would move completely out of Chicago. We had hoped that the packers would put up a modern plant within the stockyards area, but as basic reasons for abandoning Chicago they listed factors such as low efficiency of labor, high taxes, and high cost of water.

# The Electronic Beginnings of Banking

## HOW TO AUTOMATE A GIANT

### Machines Join People in the Nation's Banks

"Automation has made a dramatic entrance into financial circles and has placed us on the threshold of an exciting new age," stated Robert K. Wilmouth, vice president in charge of operations for the First National Bank of Chicago.

Mr. Wilmouth is in a good position to speak authoritatively. He has been responsible for the installation in his bank of a computer complex valued at approximately five million dollars in total initial costs. In addition, he is chairman of the Automation Committee of the American Banking Association, which represents more than 95 per cent of the commercial banks in the United States.

#### Automation and the Big Banking Boom

The significant move to bank automation began approximately 10 years ago when bank management recognized that increasing operating problems, including a mounting work load, were besetting the nation's commercial banks.

A bank's most important job is processing checks. Each check passes through about two and one-third banks and is handled as much as 20 times. In 1952, about eight billion checks were written, but by 1960 the total was approximately 13 billion. By 1970 there could be an annual avalanche of more than 22 billion checks inundating the banking industry.

Other factors, too, have propelled banking mechanization. Between 1946 and 1960, the nation's commercial banks had a great growth of business activity. The number of savings accounts increased 33 per cent; commercial loans, 113 per cent; checking account activity, 163 per cent; mortgages, 290 per cent; and installment credit, an impressive, mushrooming 850 per cent. Also, the paper work of personal trust and stock-transfer procedures and other areas has increased significantly.

Such growth has been a result, not a cause. It reflects the overall growth of the nation during this time. National population has increased about two per cent each year; economic activity, as measured by gross national product, also has increased significantly. And with changing economic and social conditions an ever-more-demanding public has been seeking more assistance in a greater variety of services categories.

#### By A. D. 2100, a Nation of Bankers

In addition to these external pressures leading to automation, there also have been several trends within banking that have exerted internal pressures for technological solutions:

First, is the continuing development of intricate new services, heretofore foreign to banks, such as lock collection plans, freight payment plans, and credit cards.

Second, is the shift, now well established, from wholesale activities that serve the large corporations, to retail activities that require more detailed processing for banks.

Finally, there is the growth in bank employment. Few industries in the United States today exceed the banking industry in ratio of clerical employees to total employees and ratio of payroll costs to total costs. *If banking employment continued its post-World-War-II growth, everybody in the labor force would be working in banks by the year 2100.*

Bankers, therefore, have instituted mechanization to stabilize labor costs and preserve profits.

#### Magnetic Characters are a Boon

Banks have accepted these challenges with a speed uncommon for a relatively conservative

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The accompanying chapter consists of abstractions of the testimony presented by the witnesses appearing before the Banking Hearings conducted September 15, 1966, by the State of Illinois Commission on Automation and Technological Progress. The testimony was presented in Room 212, Illinois State Capitol Building, Springfield, Ill. NOTE: See Appendix for the list of witnesses.

profession. To investigate the possibilities of using mechanization in banking, a cooperative enterprise was developed by the American Bankers Association, the printing industry, the office equipment manufacturers, and the data processing research groups formed in the late 1950's by the major banks in the country.

The first solution developed by this group was Magnetic Ink Character Recognition, known as MICR, and a great boon in processing the mounting volume of checks. This group also designed and produced equipment to meet the needs of banks of all sizes, equipment ranging from semi-automatic "tronic" bookkeeping machines to fully-automated systems that are linked to high-speed computers.

### Breaking the Check Barrier

Breaking the check barrier is perhaps banking's biggest single automation success. This is where those lumpy Arabic numerals at the base of checks—the MICR figures—come in.

When a check comes into a bank, the dollar amount is imprinted in magnetic ink beside the other numbers. Then the checks go into a "reader sorter" which reads the magnetic ink on the checks, sorts them into pockets representing either other banks or checks written on accounts within the bank where they are received. The reading machine, which has recorded the magnetic ink data on magnetic tape, transmits the account number and dollar amount to the computer. The computer in turn posts the items to the proper accounts and then figures out a new balance for this account. Deposit tickets are handled in essentially the same manner.

The cost to customers for these automated services has not risen as a result of the introduction of electronic computer devices nor has it been significantly reduced.

### Finding Business, Analyzing Bonds

Computers have other important banking jobs besides deposit accounting. They are used to keep track of consumer, mortgage, and commercial loans; do trust accounting work; and handle the bank's own book work. All these functions are performed with greater accuracy than in non-automated systems, and accuracy is a prime requisite for banking operations.

Computers also are useful banking tools for market and business research activities, for example, in finding the best locations for the development of new retail banking customers, or in choosing locations for branch banks. And computers are used to determine the number of tellers needed at a given bank period; for capital investment analysis studies; and in bond trade analysis programs.

### A New Way of Banking Life

For business firms, banks can provide automated customer services such as account-reconcilement programs, bill-collection programs, sales analysis, accounts receivable and payable, expense analysis, and inventory controls. Computer services to financial institutions can encompass bookkeeping programs for banks, and other financial, investment, and insurance organizations. Services for individuals may involve income and disbursement analyses; consolidated statements of all the information on a savings account, checking account, or installment credit account; automatic debits, and even a paying-agent service.

### Automation, Small and Large

These automated banking activities are not solely the province of a giant bank, although it does require ingenuity to employ the new technology in the smaller banks. Yet is automation desirable at all for small country banks—the nearly 10,000 small institutions with less than $10 million in deposits? The best answer is that the management of each bank has to decide what will be best for its particular needs. Various approaches to automation are available for the small institution.

At a fraction of the cost of large-scale digital computers, smaller banks can use non-sophisticated but efficient and economical small-scale computers. Some small banks have banded together in cooperative arrangements to use the same equipment.

And the new data-transmission facilities are helping to make automation more feasible for the relatively small local country banks located outside metropolitan areas.

### Sometimes Computers are Too Expensive

What is the rate of automation in large and small Illinois banks? To find out the American Bankers Association conducted a survey in May, 1966, of the computer status of banks in

Illinois. The survey covered 255 of Illinois' 1,064 banks, including every bank with more than $25 million in deposits and one bank out of every four with less than $25 million in deposits.

Out of the 255 banks studied, 47 had a computer installed and operating or have since had it installed; 45 banks used an off-premise computer service; 23 did not now have a computer or did not use an off-premise service but plan for a computer or off-premise service; 140 didn't do any computer processing and at the present time had no computer on order or had no plans.

The major reason that these latter banks are not automated is cost. They are doing a better job right now, or as good a job, with the manual system, combining low labor costs and efficiency. Particularly away from the large metropolitan centers, where labor costs are lower, a computer can't beat a good, workable, low cost "sight pay single post" bookkeeping system because processing costs are too high.

### Across the Nation

The American Bankers Association recently conducted a national survey of computer use in almost 9,000 commercial banks out of the U. S. total of roughly 15,000, giving a better than 50-per-cent sample of commercial bank automation. The results show that banks are installing computers of all sizes, varieties, and shapes at a very rapid rate.

This study indicates that automation is economically feasible in larger banks; it also indicated, however, that between 1956 and 1970 almost 60 per cent of the banks with deposits of $10 million to $45 million would adopt automation, and that in the very smallest banks—those with less than $10 million in deposits—19 percent expect to become automated or to use automated services by 1970. Beyond 1970 automation is expected to spread to 37 per cent of these small country banks.

### Banking by Wire

Hardly a day goes by that the banking press does not comment on the new breakthroughs in data transmission. This capability for sending banking data at electromagnetic speed from one location to another will change bank services as we know them today. The telephone will now take data processing services anywhere the phone lines go.

Other devices in telecommunications also have banking applications, including:

- Long-distance Xerography—already available, for projecting graphic representation from one location to another.
- Audio-response units—now in trial use, for keying in numerical or alphabetical information and getting back in audio response the information that is stored on a computer.
- Telephone check-writing—a blue-sky possibility, by means of which the housewife of 1975 could use a standard touchtone card-dialer telephone to "call in" her checks.
- Optimal scanning equipment—used with automated computer equipment to scan a piece of paper and put the information from it onto magnetic tape.

Using terminal devices operated in conjunction with on-line real time savings systems a bank has the capability today of knowing its passbook liability at any given moment. By depressing a few keys on the terminal devices, this system automatically will update a passbook chronologically, indicating every entry, the monthly deposits, and also the deposits of interest accumulated to the account.

### Speed Goes Up, Cost Goes Down

There is no doubt at all that computers are getting smaller, faster, and cheaper to rent or buy. The first reader-sorter brought into the banking industry cost well in excess of $100,000. There is one on the market today for roughly $17,500. Some high-speed printers that print both alphabetic and numeric forms have cost $75,000 or $80,000 apiece; there are slower printers on the market today that print only about 300 lines a minute, but they rent for approximately $300 a month.

Computer utility companies are developing to service banks of all sizes. A large bank might use such a utility organization for machine backup and for peak period usage. A small bank with deposits of a few million dollars might contract with the same company for a full range of bank bookkeeping services. Larger banks are supplying computer services to smaller banks. There is really no location in Illinois where it is technically infeasible for a bank to employ automated services. In most banks across the country, computer services to smaller banks are rendered on a fee basis.

### No Checks, No Cash, But Not Yet

What about the future?

Even with all these technical advances, the customer is still paying cash for his purchases and he is still writing checks. The age of the checkless society or the cashless society still has many obstacles to overcome before the concept is readily accepted both by bankers and the general public. There are trends, however, that indicate that we will use less and less cash and fewer and fewer checks. George W. Mitchell, a member of the Federal Reserve Board and an advocate of the "checkless-cashless" society, replies to those who are skeptical about this development that most of the innovations involved already are being used piecemeal by individual banks in all sections of the country.

### A New Triangle: Bankers, Automation, Employees

The future of bank automation from the technological standpoint holds many promising opportunities for both the banking fraternity and for the public. Bankers have kept abreast of new technological developments; at the same time they have *not* forgotten about the human factor, the problem of people in automation. This is a subject that breaks down roughly into two areas, namely, human skills and human totals or numbers.

The question of how to select the right people for bank automation is settled almost universally by recruiting present staff. There is a serious shortage of people with the needed technical skills. The training period is relatively long, and there is great competition among banks for these technical people. The major problem today is to get the necessary trainees. Banks generally have trained their own personnel, but the need for trained people is so great that there is a definite need for schooling in this area. Southern Illinois University has data processing courses, as does the University of Illinois, and there are even high schools that are now starting data processing courses.

The other question about people relates to the *number* of employees. What becomes of people who have been displaced by automation?* The answer in almost all cases is that they are transferred to similar or better positions. The fact is that statewide in Illinois banking employment actually has *risen* about one-fortieth. This is partly the result of the offering of new services, *but in no case have people been summarily dismissed because of automation.*

## THE CAREFUL APPROACH TO E.D.P.

### Form a Committee, Make the Bank Grow

"Automation is a relative term. The typewriter automated the quill and pen. The proof machine automated the adding machine. To banks, the printed-circuit, transistorized phase of automation is a logical and vital next step in a continuing fight to survive."

This evolutionary theory of automation was expressed by David E. Connor, senior vice president of the Commercial National Bank of Peoria. Mr. Connor's chief area of responsibility is the operations and administration of the bank.

The Commercial National Bank of Peoria is the largest Illinois bank outside Chicago, the eleventh largest in the state. It has footings of $170 million and employs 290 people. This bank has been operating an EDP installation since November, 1964, and as of September,

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*NOTE: On the subject of man and automation an interesting comment in poetical form is the following verse, "Ode to Us, or Man Versus Machine," by Hilbert Schurcle, Jr.:

"I think that I shall never see,
A calculator made like me.
A me that likes martinis dry,
And on the rocks, a little rye.

"A me that looks at girls and such,
But mostly girls and very much.
A me that wears an overcoat,
And likes a risque anecdote.

"A me that taps a foot and grins,
Whenever Dixieland begins.
They make computers for a fee,
But only moms can make a me."

1966 was using an IBM Model 1460 tape system (an IBM Model 360 was scheduled for delivery later in 1966). This degree of automation has permitted the bank to operate demand deposit accounts for seven to eight correspondent banks and to provide such services as payroll accounting, general ledger, and account reconciliation, for miscellaneous commercial customers.

### The Paper Assembly Line

The first reason for automating the Commercial National was the rising volume of paper that needed to be processed. Processing paper is a bank's assembly line. Some people manufacture cars; banks manufacture paper work. This bank has been experiencing an increasing use of checking accounts, more types of savings, more transactions on each savings account, and more installment loans. The use of its Trust Department has been increasing probably as much as that of any other service in the bank, and in addition, the bank has an increasing number of governmental reports to fill out.

The second reason for automation at Commercial National was the development of a management information system. In the long run this is going to be the most important application of automation. Both of these problem areas—paper work costs and the maintenance of an adequate information system—are really economic in nature.

### Automation is NOT Judgment

A bank, like any other unit in the free-enterprise system, has to keep its cost as low as its competitors', and this requires at least comparable knowledge of current conditions and changes. Yet institutions that have similar costs and data accumulation will still reach different decisions, for no level of automation conceivable can replace the judgment of men.

### Little Glamour and Early Marriage

These were some of the general conditions and specific problems that led to automation. There were others too.

The trend of costs at Commercial National was not reassuring. Providing physical space for operations was becoming more and more difficult. Securing, training, and keeping adequate personnel was another facet of the cost problem. The turnover rate was high. Most employees in the bookkeeping and proof departments were female. Their jobs had little glamour; many married early. Offering higher wages would have made it impossible for the bank to stay competitive.

### The Committee is Formed

Bankers are basically favorable to the idea of automation, both because of their own experience and the experience of their major customers. With this predisposition, therefore, and prompted by those Svengalis, the equipment salesmen, the Commercial National Bank investigated EDP as a solution.

The costs of installing an EDP system are monumental. Commercial National had to know where it was going with this large expenditure and why it was going there. To state its objective the bank formed a group called the Management Committee. As a basic step in formulating the bank's automation objective this Committee asked the following question:

"Will EDP stabilize unit costs of paper work processing at a level far enough below the present rate extended?"

In other words, if bank services continue at their present rate, without increase or decrease, for a period of five to 10 years, will the savings in costs realized by operating an EDP system, compared to the costs of the present system, be sufficient to justify the original EDP cost? If not, will other advantages of the automated system still make it worth assuming the additional cost?

The Management Committee consisted of a member of senior management, the chief operations officer, a staff member assigned to organize the feasibility study, and an outsider who was hired to provide technical competence. This group basically was a study team reporting to senior management. Buck-passing about automation stopped at the chair of the Committee's member of senior management.

The Commercial National reached several conclusions or answers:

- Electronic data processing is a proven tool, and an important one to a medium-sized bank that wants to stay in the swim with the big boys of today's banking.
- Electronic data processing can help to sta-

bilize costs, including the amortization of the sizeable start-up expenses.

- Electronic data processing has the potential to be extremely valuable in management information. Sophistication in the field is vital to successful installation survival.
- The personnel problems are not insurmountable.
- The audit capabilities of data processing are among its most significant advantages. If it is properly understood, auditing through electronic data processing is a major step forward —easier, more accurate, more detailed.
- Automation is a *very* complicated subject, to be approached with care and a very high level of top management awareness of the promises and problems involved.

### After Blarney, the Roosting Chickens

On the basis of these conclusions, the Management Committee recommended to the Executive Committee of the Board that the Commercial National proceed to install automated equipment.

This same method of study is still followed as the Commercial National moves ahead in this fascinating field of automation. The penalty for faulty planning or wishful thinking is as great as the possible benefits. A great deal of blarney exists in the EDP field—blarney from equipment salesmen, EDP personnel wishing to build departments, and top management people who like to brag a little. A bank must be known for proved performance. In EDP, promised chickens have a way of coming home to roost and roost and roost.

### No Obsolete High School Girls

In 1961, the Commercial and Central Banks of Peoria merged. Employment at that point, which naturally included some duplication, numbered 277. This duplication was one of the reasons for the merger. Five years later (September, 1966) after some of the duplication has been eliminated, employment has grown to 292. There were 58 officers then and 58 officers now, not the same officers, but the same number.

Every employee was told that no one would lose his job because of automation, and every employee was offered the chance to take a programmer's aptitude test. Programmers were selected from those who made the highest scores on this test. Some reassignments plus the expected annual 20-per-cent reduction in the staffs of the bookkeeping and proof departments because of turnover matched the 20-per-cent expected reduction in these departments because of automation. Also, job categories changed, involving some retraining. In summary, job opportunities increased for some, decreased for no one, and made no difference to others. It is fair to say that fewer girls were hired. The untrained high school girl, in the banking industry, is becoming obsolete.

To some extent rented machines have been substituted for personnel in the lower-wage categories. But the total payroll, both in number and dollars, has increased. The employment profile has changed.

### Better Banking, Bear Wrestles, and Burials

This move to automation has been consistent with a long-standing Commercial National policy aggressively attacking unit costs so that the bank can profitably expand its services and add new ones. This policy has led to a one-per-cent annual increase in payroll numbers and an annual increase in net operating earnings of about four or five per cent a year.

Automation development costs at the Commercial National were about $300,000. The bank expected to recover these costs over a five year period, beginning in 1967.

Many new services have been added, with many more to come. Commercial National is like the Russian who wrestled the bear—How does he let go of it? There are many, many new developments in EDP coming forward all the time. Electronic Data Processing is a fact of life. The banking industry has to learn how to adjust to it and work with it, because if it doesn't, EDP will bury the banks.

The use of EDP in banking will increase. After demand deposit accounting and savings (primarily in large banks) are automated, other applications will be added as part of a management information system, and probably will be justified on an incremental cost, that is, the main system will absorb the great part of the expense, and then the incremental use will be justified.

### Add EDP Skills to School Curricula

Electronic data processing will cause employment to increase not only in the EDP division but in the rest of the bank too. About 60 percent of the banking business is done in two days out of the week. You have to staff for that peak. The rest of the week the staff is relatively less employed, and considerably more work can be processed during that time. More services, therefore, can be offered, in the long run boosting the bank's total employment.

The skills necessary for EDP are in some part inherited—the native or family-inherited ability of being able to put square pegs in square holes. But some of the more complex, systemized skills such as logic and higher math must be learned. The schools in Illinois must recognize this need and move to answer it quickly. Computer techniques should be taught in the schools as frequently as typing is taught today.

## FROM CONSERVATISM TO COMPUTER

### People, Not Equipment, Are the Key

In an industry often noted for its conservatism, the bank represented by William V. Allen has been particularly conservative, according to Mr. Allen himself, who is a vice president of the institution. This is the Oak Park Trust and Savings Bank, an 88-million-dollar institution located in the Western Chicago suburb of Oak Park.

Investigation of automation possibilities for Oak Park Trust and Savings was prompted by the development of the magnetic ink common language. For the first time there was some indication that it could be feasible for a bank of Oak Park's size—then, in 1960, $76 million—to consider the possible benefits of automated processing. If the original document, the check or deposit, could become direct input with relatively minor additional handling (as opposed to a tab system) the possibilities seemed worth investigating.

#### Many Magnetic Advantages

In September, 1960, several representatives of the bank went to a clinic sponsored by a check printer to learn in detail the requirements and problems of magnetic ink character recognition. They returned to recommend that Oak Park institute the MICR system.

One reason for recommending MICR encoding at this time was to cooperate with the Federal Reserve System and assist their early use of high-speed processing. The proposal also was prompted by Oak Park's desire to obtain economically and as soon as possible a high percentage of checks in circulation with MICR qualifications. Further, this proposal also considered the possible direct benefits to the bank of sending its processing work to a correspondent bank, a service bureau, or a mutual cooperative or even of obtaining its own equipment. At that time the equipment manufacturers said that buying or leasing computer equipment would not be justified for a medium-sized bank. They were willing to accept the order, however, when it was placed.

The Board approved MICR imprinting but specifically withheld approval of any further venture in the area of automation. Oak Park Trust and Savings installed a numbering system, but found that their check supplier could not provide magnetic ink coding for another year. After difficulty in instituting a temporary alternative system the bank, in July, 1961, installed on-premise MICR printing equipment.

#### The Computer Arrives

After examining equipment of five manufacturers and reviewing proposals from three, the committee recommended that the bank purchase a Burroughs 270 system. The sorter-reader was delivered in October, 1961, and was used for physical sequencing of checks and deposits, thereby replacing manual sorting and replacing three employees. These three people were transferred to other positions in the bank. The complete computer system was delivered in late December, 1962.

Low cost accounts were converted by May, 1963, and in July the rest of the checking accounts were completely converted. In December, 1963 proof and transit were converted, making Oak Park Trust and Savings the second bank in the Chicago area to convert this application.

### Stepping Stones to Conversion

Other applications since converted include savings, installment loan, mortgage loan, payroll and personal trust. Scheduled for future conversion are general ledger, commercial loans and some customer services. Using a stepping-stone approach, Oak Park Trust has concentrated on its own internal applications. The computer is used in several other applications such as direct mail envelope addressing and market review, but there are no present plans for getting into real management information systems.

The present computer very well may be the last one at Oak Park. In the future it may be more practical to utilize an off-premise computer utility through leased lines, while probably retaining some peripheral gear at the bank. The advantage of purchase over leasing was quite substantial as long as the same system was retained five years.

### Fewer Employees, But No Lay-Offs

Six years ago the operations which then were performed manually, and are now on the computer, required 53 people and a sizeable amount of investment in machines and floor space. The direct salary expense for these employees alone was 27.9 per cent of the bank's total salary expense. These same functions now cost more in equipment but less in floor space and only 13 per cent of total salary expense. The number of employees in this area was reduced over a three-year period from 53 full-time employees to 18 full-time and nine part-time. *No employee was laid off.*

Salaries paid now are quite a bit higher than before automation. Bookkeepers formerly earned about $275 a month; the equivalent job now pays $375 to $390, and in the computer-operator area pays more. Total employment now is about two more than it was six years ago. The productivity of each individual unquestionably has increased; each job is a little more interesting now.

### People Not Computers Are the Key

Before automation, Oak Park Trust and Savings was beginning to encounter shortages of personnel even remotely qualified to fill its needs. By contrast, the bank's present employees are competent. They enjoy their work, and they are reasonably well paid for the jobs they do.

The people, not the computer, are the key to a successful operation. First-rate people—that is, with first-rate skills—and a second-rate computer are preferable to second-rate people and first-rate computer.

It does not seem likely that Oak Park Trust and Savings has adversely affected the overall labor market. The Bank has created new, more rewarding, more interesting jobs at better pay levels. The only thing that has been eliminated is the employment of the marginally employable. Even these people were becoming scarce, and from all indications now would be virtually unavailable.

## ENTER, THE PROBLEM-SOLVER

### Don't Forget the Birthday Cards

How does progressive bank management in a dynamic suburban city go about determining the feasibility of automation?

An answer to this question was given by Joseph J. McAndrew, assistant vice president of the First National Bank of Des Plaines, who has had 27 years' experience in data processing. This bank is in Des Plaines, Ill., a Chicago suburban city of about 50,000 located 17 miles northwest of Chicago's Loop. The First National was chartered in 1913, when Des Plaines was a town of about 3,000. Growth is a vital influence in decision making, and it is significant to note that this community and the bank have grown together. In 1930 Des Plaines had a population of 8,800 and the total assets of the bank were $1,200,000. In 1940 the figures were 9,500 and $3 million;

in 1960, 35,000 and $44 million; and in 1965, after a special census, more than 50,000 and nearly $70 million.

For the First National's assets this represents a growth of 220 per cent from 1950 to 1960 and an additional 57 per cent from 1960 to 1965. In 1957 the bank moved into a new building, anticipating more growth. Later a second bank was chartered in the city, and today, competition within Des Plaines includes two other banks and two Savings and Loan Associations. Within a seven-mile radius there are about 20 banks and 10 Savings and Loans.

Early in 1961, management became concerned with the organization and operational requirements needed to continue giving the best possible service despite ever-increasing workloads. When the bank moved into its new quarters, it began using semi-automated "tronic" bookkeeping machines, but soon the bookkeeping function was on two shifts. The question was: "Is this the time to consider the potentials of automation?"

Discussions were held with large Chicago Loop banks that were doing correspondent servicing, to determine what internal changes would be required to go to automation.

### What Can Take the Place of People?

The influx of industry into the area that was contributing to the growth of the community also was contributing to a problem for the banks. The unemployment rate was declining constantly. The financial industry never has been notorious for high salaries, and personnel turnover was becoming a critical factor in the bank. The source of new personnel was disappearing.

Management quickly decided that this was the time for professional evaluation, and contracted for a professional study of the problems and recommendations. A final report, submitted in October, 1962, recommended that the bank begin to use computer service centers and delay considering an on-premise computer for five to 10 years.

The management of the First National decided that one of the first steps in following these recommendations would be to establish "universal tellers," and simultaneously adopt "statement savings" with quarterly statements to be mailed to the savings customers. The aim was to make banking more convenient for the customer.

Savings data were keypunched and sent to a service center in the latter part of 1963. A statement representing the last quarter activity was prepared for each of the 17,000 customers. Early in January, 1964 IRS form 1099's, for those who needed them, and an advertising brochure explaining the new system were mailed out.

Another recommendation to the bank was that business checking accounts be processed by a correspondent bank automation department as an introduction to demand deposit account processing. The Bank did not react favorably to this recommendation, however, because these accounts were not segregated from other commercial accounts. The First National decided to obtain competitive bids for complete demand deposit accounting processing from correspondent bank and commercial processing centers.

### Meanwhile, Back at the Problems

At the same time these studies were in process the volume of work continued to increase and personnel turnover was becoming more critical. Employee wages at the First National were higher than at most of the surrounding competitive banks, and fringe benefits were equal or better, yet recruitment was becoming more and more difficult. One factor was that banks in the area are closed on Wednesdays, requiring a double workload on Thursday, remaining open until 8:00 on Friday, and working five or six hours on Saturday; although the average work week is only 37½ hours, the split week is not popular. Another factor, already alluded to, was that the unemployment rate in the area dropped below two per cent.

And so armed now with the bids for further computer processing and faced with these staffing problems, management decided that the time had come to order a computer system of its own. To reaffirm their conclusion they had another management consulting firm reappraise current conditions.

The consultants' report, submitted in February, 1964, confirmed management's decision, as evidenced by comparative estimated annual costs of processing only demand deposit and savings accounts. The consultants' report concluded that the present system employed by the bank for these two applications was costing $345,000 a year. Bids obtained from outside service agencies would have reduced the expense to $337,000 a year, but according to the plans that had been formulated, installing a computer on premise to process these two applications would cost only $330,000.

The potential saving with automation would be $15,000. And the machine systems also could provide for further growth potential, a more stabilized and upgraded work force, additional customer services, and flexibility of operations. These potential automation benefits supplied the impetus for immediate action.

### Automation Arrives

All employees were given the opportunity to take operator and programmer aptitude tests, since the Bank planned to staff from within, as far as possible.

Mr. McAndrew joined the Bank at the end of June, 1964, and after a review of previous studies, and an appraisal of current conditions, he established a programmer training schedule for three employees. It was to be completed by the end of August. The delivery of the computer was advanced from March, 1965 to the end of September, 1964.

On October 1, 1964 the First National's own computer prepared the quarterly savings statements. Processing of all Special Checking Accounts was converted to computer processing on October 15, 1964 and all other checking accounts were converted November 21. Also, another program was modified to fit the Bank's demand deposit accounting program.

### Three Months Later

As of December 31, 1964, the night shift was eliminated, and normal attrition pared the day shift down to contemplated requirements.* The Data Processing Department added four upgraded positions.

The results of three months of computer processing indicated the following:

1. Net reduction of 17 employees; 2. Elimination of overtime in bookkeeping; 3. Discontinuance of outside services such as service charge calculations and special mailings; 4. Elimination of interdepartmental assistance in putting up checking account statements, other than month-end; 5. Servicing 2,500 additional deposit accounts; 6. Evidence of an even swap of wage dollars for equipment rental dollars.

The First National of Des Plaines currently processes through the computer 17,000 checking accounts, 18,000 savings accounts, 7,500 installment loan accounts, 5,000 safe deposit billings, 2,000 Christmas Club accounts, stockholders' records, and deposit bag billings. The computer even prepares the envelopes for the birthday cards the Bank sends to junior savings customers. Other services available and being offered include account reconciliation for business customers' payrolls; processing for other banks or savings and loan associations; job cost schedules; accounts receivable and billing.

### Automation is a Many Talented Thing

Some of the more common factors the First National of Des Plaines considered in evaluating the decision to automate were: to freeze or reduce operating costs; to improve internal systems; to improve management reports; to offer additional services to customers; to increase flexibility for handling additional volume; to provide a tighter audit control; and to meet competition.

*All* automation system studies have a common objective—to eliminate waste and improve efficiency. Increased workload volumes force business at some point in their progress to shift into a departmentalized organization. Departmentalization requires batch processing, and this requires progressively burdensome control.

Departmentalization also breeds specialization, and this can constrain individual performance so much that incentives are dull or deadened. Carelessness results, causing increased errors and waste. Continual systems evaluations are a prime requisite to efficiency.

The basic difference between manual and automated systems is that automation requires increased accuracy in the preparation of source information. Once data have been accurately transferred into machine-recognizable media (such as punched card, punched paper tape, magnetic ink characters, or optical reading font) all such input controls can be reconciled readily. The basic manual operations that remain are the disposition of the original input documents and distribution of machine prepared journals and reports. The initial justification for automated systems can be achieved by paring down duplication of effort and inefficiencies in the present system.

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*NOTE: Night shift employees were given the opportunity to work full-time during the day. Many of them were not in a position to accept this because they were mothers and could not come to work during the day because they had to care for their children. Additional workers were hired to take their positions.

### More Business Still Means More Employees

Management is not in danger of being replaced by the computer. Although the evaluation that a loan officer does concerning the amount of mortgage loans and type of property, could be computerized, it is still up to the individual to make a judgment. What the computer does primarily is assure management that all loans and all credits have been proved against all known criteria.

Primarily because of overall growth an organization utilizing automation inevitably ends up with as many, if not more employees than it had prior to automation, and most positions are upgraded because they entail more authority and responsibility.

## THE BANK EXAMINER MEETS AUTOMATION

### Studying the Bank with its Own Equipment

Since automation has come to banks it also, necessarily, has come to bank examining.

The influence of automation on bank examining in Illinois was discussed by Paul Starkey, a review examiner in the Department Banking Division, State of Illinois Department of Financial Institutions. The Division, reported Mr. Starkey, realized some time ago that, with banks using more and more automated equipment and procedures, certain studies would have to be made to determine the effect of this automation on the State's examination procedures and techniques. As used here, the term automated equipment means both semi-automated and fully-automated systems.

To pursue its investigation, the Banking Division initiated a study early in 1966 and, as a result of the information gathered, has initiated an automation program designed to facilitate its examinations and to fully utilize the automated equipment in the banks.

To implement its study the Banking Division circularized all Illinois State-chartered banks, and devised a 23-page questionnaire (similar to one used by the New York Banking Department), that requested information about the type of automated equipment installed and other pertinent information.

The response from the banks was practically unanimous; the results of that circularization and survey can be summarized as follows:

- Approximately 25 per cent of the 640 Illinois State-chartered banks either have their own automated equipment or are subscribing to services offered by other financial institutions or data processing centers.
- Less than five per cent of the 640 State-chartered banks have their *own* automated equipment; most of these are in Chicago and Cook County.
- Approximately 20 per cent of the 640 banks subscribe to automated services offered by either other financial institutions or service centers providing the automated services. The majority of the servicing agencies are in Metropolitan Chicago.
- Approximately 10 per cent of all banks with less than $10 million in resources were automated or subscribed to automated services.
- Approximately 55 per cent of all the banks with resources from $10 million to $50 million were automated or subscribing to automated services. Of the banks in the category of $50 million to $100 million in resources, 80 per cent had their own automated services; all banks with resources of more than $100 million in the State of Illinois have their own automated installations.

The survey divided banks into three categories according to the equipment they used:

1. Electronic data processing equipment using magnetic-core storage and tapes and discs for data storage; 2. Semi-automatic equipment such as a combination of punched cards and

core storage; 3. Even less-automatic equipment than category No. 2—such institutions considered non-automated in this survey.

### Not as Big a Cut as Expected

The questionnaire did not probe the number of employees displaced by the automated installations, although it did request information on the qualifications of the bank personnel and also data on the average monthly cost of using off-premises services. Apparently the reduction of personnel originally contemplated has not been realized. Also, the additional volume of work that is performed must be considered.

### Testing You with Your Own Equipment

In conjunction with the questionnaire and as a result of the information received from it, the Division has embarked recently upon a program commonly known as the pre-examination survey. This survey is a review of the automated equipment and procedures that a State-chartered bank may be using, the aim being to determine what equipment will be of use to the examiners and how they will use it. Although the pre-examination survey, as a technique, is not new nationally, it is new to Illinois. It is the first attempt to take advantage of the wealth of information that automated equipment and automated services make available to examiners. It includes the following:

Two or three months before the regular but unannounced bank examination in a given bank, examiners familiar with automated equipment survey the bank. The examiners determine which portions of the print-outs will be most necessary and useful for the examination, secure sample copies of the print-outs, and make comments and index those forms so that they can be readily usable by the examiners when they go in on the regular examination. They also observe the routines involved more fully than would be possible during the examination because of the press of time and the scheduling of other bank operations.

This procedure enables the Department of Financial Institutions to facilitate examinations, and it also benefits the bank by permitting it to get back to regular operations more quickly. The Department can schedule its requests to banks for the survey so that there is a minimal interruption of each bank's normal work flow. Machine time is extremely valuable, and banks have schedules they must meet.

### Building a Nucleus of Automation Skills

It is not anticipated that examiners will be involved in the operating of automated equipment. Present plans encompass the additional training of examiners, particularly a few examiners as specialists.

### More Automation Means More Accuracy

Results indicate that automation has not changed the objectives of the conventional bank examination. Yet there is no question that there are better and quicker ways to get the necessary information than the conventional examination, requiring, as it did, so many examiner man-hours. There also is no question, aside from temporary malfunctions, about the increased accuracy of records in automated banks.

### Doing the Examiner's Job

One of the areas of bank procedures that must be given increasing attention in the examination is the time and effort given to the Electronic Data Processing Department by the Audit Section of the bank.

The quality of applicants for mortgages and installment loans is of interest to the bank examiner. The August, 1966 issue of *Audit Gram* tells of a West Coast bank and a computer manufacturer that have prepared a program that calculates a desirability score for mortgage applicants on the basis of geographical area, type of property, and characteristics of the applicant. They also have devised a similar program for evaluating installment loan applicants. This is not exactly displacing an examiner function, but it could certainly implement displacement to a great degree.

Such functions, coupled with the implementations of the central file information systems currently being developed, will greatly facilitate the procedures we use in State bank examinations. The Banking Division is greatly encouraged by the prospects of the help it will receive in this area.

### No Need to Automate Ourselves Yet

The Division's plans for using automated systems have changed somewhat, even in the short period of time that it has been studying the problem.

Concerning the degree of control that it will attempt to establish over the production and the generation of print-outs the Division probably will evolve some combination of the pre-examination survey plus programs written and designed specifically for its use or the use of the auditor of the bank. Then, rather than the examiners actually performing the control functions themselves, the control functions would be performed in conjunction with the auditor and under close examiner supervision.

The Banking Division does not yet have any programs developed or written that could be applied to the computers producing the print-outs that we require. There is no automated equipment in the Division whatsoever. The matter is under continual consideration by the Division, however, and if it becomes feasible and necessary to automate its operations, the Division will certainly take the necessary steps.

# *New Computers, New Skills for Insurance*

## REMODELING BY ELECTRONICS

### Fewer Offices, More Employees, Greater Skills

"The years from 1952 to 1957 were the glamour era of electronic computers," states A. C. Vanselow, vice president and comptroller of the Franklin Life Insurance Company and past chairman of the National Automation Committee of the Life Office Management Association. Mr. Vanselow continued:

"Newspapers, magazines, radio and television commentators and public relations men related the feats of prowess that appeared to be limitless. The new electronic brains augured to substitute the machine for the common functions of the human mind.

"It also was during this era that numerous articles were written predicting wholesale unemployment as the result of these machines."

The first phase, involving the pioneers in the insurance industry, has passed into the next era. Electronic computers, now commonly referred to as data processing machines, no longer are considered spectacular even though their memory capacities and processing speeds have increased a hundredfold. Why? Because they're no longer mysterious. Office administrators have been systematically studying, analyzing, and evaluating the benefits offered by this new method of mechanized accounting and record keeping.

Insurance administrators have been searching for new tools to help lighten the ever-increasing burden in their offices which has been brought on by more record-keeping for state and Federal governments, by the shortage of clerical workers, and by the economy of abundance that has made all business boom. This is an era where the clerical and administrative jobs in the office have grown from minor positions to jobs of tremendous importance.

#### Discard the Punched-Card Approach

The rate of technological change today is more rapid than any we have known previously, and it promises to increase, giving us not

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**The accompanying chapter consists of abstractions of the testimony presented by the witnesses appearing before the Insurance Hearings conducted September 15, 1966, by the State of Illinois Commission on Automation and Technological Progress. The testimony was presented in Room 212, Illinois State Capitol Building, Springfield, Ill. NOTE: See Appendix for the list of witnesses.**

only instruments for cutting costs but, more important, tools for extending the range of man's capability.

Much of the work done by a life insurance company consists of service to the policyowner and agency representatives. To determine the status of any policy at any time the insurance firm must maintain a record of many facts for each policy over many years. Paper work long has been of great concern to life insurance companies. The typewriter, adding machine, addressograph, and punched card equipment merely speeded up a system established many years ago. The computer presented for the first time an entirely new and revolutionary principle in data processing. The computer required that we discard our manual and punched-card approach, reexamining the basic records that are essential for life-insurance administration.

At this junction it should be noted that not all departments of a life insurance company are subject to automation. The Policyowners Service Department, for example, which answers correspondence, is pretty difficult to automate. And interestingly, it is in areas such as this one that insurance firm employment rises with the increased volume of business brought in by the computers.

The insurance industry ranks among the largest employers in the United States, employing more than 885,000 people. More than half of these (470,000) are employed by life companies. Total employment rose approximately 32 per cent between 1954 and 1964, with most of the increase occurring in the first five years.

### A Computer Pioneer

Insurance companies were among the first business firms to use electronic computers. Franklin Life was one of the pioneers in this field. This company signed the first commercial contract for a Univac computer system on June 10, 1952; it installed the first optical scanning system recording directly to magnetic tape in November, 1962.

Why did Franklin Life consider automation essential?

The old manual and punched-card system had served the company's purpose well, up to this point, but it was thought that life insurance in general would not be able to keep up with the continued demand for its services without introducing data processing equipment.

### Well Designed for Automation

Following Franklin Life's contracting for a computer, in 1952, the firm devoted three years to training personnel and designing the system. This system was designed and programmed to include such functions as premium billing, premium accounting, dividend accounting, commission accounting, and valuation of reserves. Additional applications have since been made, including agency production and statistics, policy loan accounting, management reports, and most phases of processing new applications for insurance, including the issuance of the policies and necessary records.

Franklin Life also now provides many heretofore unavailable services for its policyowners, agency associates and Home Office departments. In the future it also will include non-medical underwriting, investments of all types and general ledger accounting. The exact results of a new system can be simulated now before it is placed in operation. Other objectives, including investment processing, will be converted within the next two or three years, but the main goal has been accomplished. The company has provided a system that gives faster and better service to policyowners and agency associates and reduces administrative costs.

### The Company that Automation Helped Build

Since 1952, when Franklin Life had in force approximately 400,000 policies totaling about $1 billion of insurance, the company has grown to its present size of more than 950,000 policies totaling more than $6,330,000,000 of insurance, bringing an annual premium income exceeding $130 million. It is expected to reach $1 billion in assets before the end of this year (1966).

The Home Office employees, numbering 772 in 1952, now total more than 11,150, including clerical, technical, administrative, and custodial personnel.

The company has been able to absorb this growth because of its use of computers.

### Univac Was Only the Beginning

The Franklin Life Insurance Company installed its first Univac in 1955. The firm now has four Univac computers, three 600 line-a-minute high speed printers, one optical scanner, and 24 Unitypers, which are similar to electric typewriters but type directly onto magnetic tape. This installation of Unitypers is the largest in the United States and one of the few of its kind anywhere.

Changes are still being made. The company is now installing a large scale Univac III, and before the end of 1966 it will install a small scale 1004 Model III, which will eventually replace three of the present four computers. Within the next six months all the Unitypers will be replaced with paper-tape machines. Franklin Life is unique in that it has its own staff of electronic engineers and technicians to maintain this equipment, which operates 24 hours a day.

### Automation Comes to the Employees

From the very beginning of the automation process, employees were assured that the computer system would reduce repetitive and monotonous daily tasks, permitting continued expansion without greatly increasing the number of employees. Assurance was given that no employee doing a good job would be released.

These promises have been kept. Management felt that it was essential not only to find new jobs to which re-located individuals would adapt themselves, but also jobs in which they would find job satisfaction. The Company's goal has been to eliminate jobs at the lower level and to give present employees the opportunity to qualify for those jobs created by the new system.

### The Best Trainer of High School Graduates

Beginning in 1957 hiring standards were increased. More than any other industry, the insurance industry can train alert, high school graduates to become valuable employees over a period of years by learning data processing skills.

The elimination of many lower-level jobs such as junior clerks and file clerks has resulted in a percentage increase of clerks, senior clerks, and supervisors—plus the newly created EDP programmers, EDP systems analysts, computer operational people, electronic engineers and technicians, and other higher skilled jobs. The occupational make-up of an EDP department includes 37 per cent input personnel; 22 per cent supporting clerical workers; 22 per cent systems analysts and programmers; 14.5 per cent computer and equipment operators; four per cent supervisory, and 0.5 per cent maintenance engineers.

The Accounting Departments have been more drastically affected by EDP than other areas. In the transition of Franklin Life to automation five entire departments and four sections within others were eliminated. At the same time the new Data Processing Department and four new sections in other existing departments were created.

### EDP Boosts Salaries

The average monthly salary in those job categories affected has increased from $200.68 in 1955 to $406.39 in 1965, an increase of 103 per cent. Of this higher total, however, $52.78 was because of normal wage adjustments that would have occurred anyway. There was a real wage increase of $152.39, or 77 per cent, directly attributable to EDP.

In 1955, prior to conversion, 330 employees in the Accounting Departments billed and completely serviced more than 2,293,000 items, an average of 6,948 per employee. In 1965, following conversion, 424 employees billed and serviced more than 4,100,000 items, an average of 9,670 per employee or a 40-per-cent increase over 1955, including the absorption of other functions. If the Company had not converted to EDP, the Accounting Departments today would require well over 600 employees and additional equipment to process the increased number of items now handled.

### A Decade's Worth of EDP

One of the benefits noted by Franklin Life in its actual experience with EDP has been the release of more than 25,000 square feet of valuable office space. The Company anticipates releasing another 10,000 square feet by early 1968. A related result of automation was that the Company was able to defer building its new four-and-a-half-million-dollar building from 1957 to 1963.

There have been other EDP benefits too.

The payment of first-year commissions has been transferred from 10 regional offices to the Home Office. All collections have been centralized in the Home Office; 12 collection offices across the country have been closed.

All agency commissions—and this includes maintaining well over 7,000 accounts and processing 300,000 individual commission entries—are now paid on a biweekly schedule, compared to monthly payments under the old system.

In a recent survey of its departments the Company has found that control of transactions is much closer by computer. The error ratio has been reduced from less than one per cent to less than 1/10 of one per cent.

Franklin Life, with automation, is now performing services for policyowners and agency associates. Using the computer, policies are now issued with complete flexibility and accuracy not possible under the old manual system. Similarly, correspondence now can be answered faster and more accurately.

While the computer has almost eliminated decision-making in routine jobs, more than 70 per cent of the supervisory jobs now have a greater number and variety of responsibilities for the individual. All surviving middle managerial responsibilities have increased 100 per cent.

### The Computer's More Understandable Policies

Premium rates in this same period have been reduced over a period of years although this is related to investments and mortality as well as to automation. And policies issued today on the computer are more understandable to the general public.

### But . . . Everybody Waits for the Computer

Despite all these advantages it is unrealistic to think that automation can do no wrong.

As the volume increases, there is less flexibility to handle exceptions; automation becomes more costly. Everything in an integrated computer system must conform to the computer schedule for action such as mailing of premium notices, agent's reminder notices, and dividend checks. All policies are now issued by computer on the night shift once a day, whereas "rush" policies formerly could be prepared, if necessary, in a matter of a few hours.

Also, while the production of figures noted earlier represents what the employees and machines are doing, individual productivity may not be any greater or even as great as it was in 1955.

### It's Easier in an Insurance Office

For several reasons automation is easier to accomplish in an organization such as a life insurance company than in factory or other industrial operation:

1. Office employees in general identify themselves with management, and communication is easier.

2. Employees in an office will participate in the conversion to a greater extent and rather enjoy, or, at least, be stimulated by the extra effort required.

3. The jobs eliminated are really those that no one wanted to do anyway; the ones left or created are generally more desirable.

### What is Ahead in Employment

It would appear on the basis of this Company's experience that employment in occupations directly related to EDP and management will increase and that employment of key punch operators and tabulating machine operators will decline within the next five years. The largest group—general clerical workers—will not disappear, but there will be fewer opportunities for jobs as file clerks and junior clerks. The life insurance industry, as such, will be able to absorb less of the labor market in the next 10 years because insurance jobs have been upgraded. Top management jobs also will require more skill. Those who aspire for such positions in the future are going to have to be computer oriented.

### Fewer in the Office, More on the Road

The development of data transmission systems and fast random access computer memories will result in greater use of "real time" processing.

The overall result of such changes will be a 5- to 10-per-cent-slower rise in life insurance office employment in the next 10 years, compared to the rise in the past 10 years which was 32 per cent. The sales force, however, will continue to grow with increasing business.

# MAKING A COMPANY POSSIBLE

## Automation is Always Beginning

"Converting to a computer is a real blood, sweat and tears operation," says Joseph W. Glynn, vice president and comptroller of the Continental Assurance Company. "Some of us who have been through this blood, sweat and tears find that other people think you can walk into a computer room, turn a switch, and everything becomes lovely. This is certainly not true. It takes many years of hard work and training."

The Continental Assurance Company, with headquarters in Chicago, Ill., has more than $11,000,000,000 in force with $1,000,000,000 in assets. The Company writes insurance in all states and in Canada. Continental conducted a computer feasibility study in 1957 when it realized that manual processing methods could no longer keep pace with the growth of the operations. This was the earliest stage of computer applications to insurance. The Company then had roughly $5,000,000,000 in force. A large part of the activity of any insurance carrier consists of the recording, storage, retrieval, and processing of information. Unless a rapidly expanding company takes advantage of every means to process this information, the burden and expense of paper work becomes insupportable. A study published by the Bureau of Labor Statistics clearly reflects this pressure to automate.

By early 1963, companies accounting for four-fifths of insurance carrier employment had installed computers. Companies accounting for another five per cent of employment had ordered EDP or were using service bureaus.

Since rates and mortality experience are similar for most life insurance companies, a company's ability to compete owes much to the quality of service it can provide.

### Expansion Demands Training

To the original IBM 705 computer which Continental installed in 1958, successively newer models, the 1401 and 1410's, have been added. An IBM 50 system, commonly referred to as the third generation computer, has recently been installed.

As EDP operations have expanded, the automation staff has grown from 25 people in 1958 to approximately 200 today. The acute shortage of trained personnel in this field made it necessary for the Company to turn to its own organization for talent, and to undertake an ambitious and costly training effort. Moreover, this early entry into the field of automation tempted companies in other industries to recruit EDP personnel from the ranks of Continental Assurance. As a result, Continental has constantly upgraded its salary structure to meet competition in all industries.

At first it was easy to overestimate the degree of specialized education an individual required for EDP work. Continental soon discovered that a major in mathematics was not a prerequisite. In fact, EDP work opened a whole new field of opportunity to high school graduates who would otherwise have found their career potential severely limited by the lack of a college degree. At the same time, automation afforded the female employee new and improved opportunities. Most of the better jobs in manual or mechanical data handling formerly had been filled by male employees. Today, women occupy many of the positions that have supplanted those earlier jobs.

During the initial phase of the employee's apprenticeship, the cost to the company for the training and development is quite sizeable. In the first six weeks, the individual spends 15 hours each week in study, on company time, away from the computer center. After training, a high school or college graduate tends to advance rapidly in salary and grade, on the basis of examinations and job application. A career development program, aimed at equipping the employee for future management responsibilities, is open to all members of the automation staff. The Company also reimburses tuition to employees who have successfully passed approved courses taken at accredited colleges and universities for college credit. In fact, the Company pays tuition and costs for all courses that are related to the insurance industry.

The insurance industry cannot invest heavily in on-the-job training to meet the requirements of jobs created by automation and then offer this training to large numbers of young people who are interested only in temporary employment. To an increasing extent, educational institutions will have to recognize and meet their responsibility to offer training in these skills. If high schools can offer training in shorthand during these days of mechanical dictation, then surely they can make room in their curricula for training in the basic skills of a rapidly growing field such as office automation.

### No Degree But Marketable

The wide availability of EDP training would benefit not only industry but also many young people who otherwise would have no comparable opportunities in career potential and earnings. Many programmers today, young men with a high school background and a logical mind, are earning more than their counterparts with a college degree because they have become so marketable.

### No Salary Savings

When an insurance company first considers the transition to computers, there is much discussion of possible savings in clerical salaries. During the early years of transition, no such savings materialize.

The Continental Assurance Company has never released an employee as a direct result of automation, yet the total workforce would be much larger in the absence of automation. Present personnel needs exceed the supply of qualified applicants for the jobs. Continental is involved in a never-ending and costly training program. Just to train a person with no previous EDP background for the first three years probably costs the firm $20,000. Yet insurance companies must contend with the problem of having their trained employees hired away by other firms. Trained employees are rarely lured from one insurance company to another. They are usually proselyted by the hardware manufacturers or by other industries, or possibly by a small company that is looking for one man to head up its computer program. Particularly in the case of certain types of EDP personnel, competitive bidding for talent has raised salary offers to seemingly unrealistic levels.

### Benefits Beyond Productivity

Given the current state of the labor market in Chicago and the changing cost structure of the insurance industry, Continental Assurance could not have grown as it has without the advantages of the computer. Electronic data processing eliminates the most monotonous and dreary jobs—positions which never did pay well, and are not easily filled today.

As for its employees, there are none who have real reason to regret the passing of the pre-computer days. The insurance company office of that period was often a scene of drudgery, where people made tedious pen-and-ink entries on ledger cards, and in journals, and then summarized their postings on a desk calculator. Many of them could expect little more than a lifetime of being tied to this sort of monotony at low wages.

Today's upgraded employee learns a set of skills which are readily marketable in any business; he enjoys many promotion opportunities. No one who recalls yesterday's working conditions could seriously doubt that the insurance office is now a vastly more interesting and attractive working environment.

### No Displacement Here

Despite the Continental Assurance Company's annual outlay of approximately $2.5 million for EDP equipment, space, and personnel, it is not simply buying a packaged solution to the burden of paper work. Its management is forced to learn and adapt to a complex and fast-changing new technology.

The Company has not encountered such issues as the displacement of workers, or evidence of loss of job satisfaction.

In terms of job satisfaction, the clerks are more stimulated by their present work than by the rather routine jobs they held before automation. Some housewives who formerly just located premium cards are now console operators. Many of them code very complex things into tape. The File Department people are upgraded. They are told what is going on in automation. They know what the output of a computer is. Years ago they would never have known. They would look at a number and give you a file.

The broader opportunities *are not open only to a select group of people* with outstanding academic qualifications, as critics of automation have alleged. Instead, they offer a whole range of new career possibilities to the qualified individual with no college training.

As for the actuary, his job is not threatened by the computer. On the contrary, the computer provides the Actuarial Department with much research data it could not have before.

### Potential Problems

It would be ridiculous to suggest that the impact of office automation on the insurance industry can never produce anything but desirable consequences for all of society. The technological shift is still young. No one can foresee all its implications, but they will be far-reaching as the capacity and versatility of new equipment eliminates present barriers to wider application.

Even more complex developments lie ahead. In the future there will be terminals in branch offices, direct on-line to the computer. There will be terminals in departments like Policyholders' Service or the Claim Department whereby an employee will simply dial into the telephone or use a cathode ray television tube or an electric typewriter that transmits data to the computer and back to the department. It is even feasible that agents in the field could have this kind of direct communication with the computer. Some day no premium notices will go out. The insurance company will merely debit the policyholder's bank account.

## COMPUTERS NEED PEOPLE

### A Personnel Bulge at Midpoint

The search for efficiency through technological innovation didn't begin with the coining of the term "automation." Some firms have been pursuing the goal for many years. Efficient office methods and equipment have been a goal, for example, of the State Farm Life Insurance Company since 1929 when the firm was established. It first used punched cards in 1932. Company growth throughout the years has called for more and more employees *and* more and faster equipment.

In this vein, Leslie Mikkelson, vice president, accounting, of the State Farm Life Insurance Company and a specialist in data processing, describes the historical interest of his firm in technological progress.

State Farm Life sells participating life insurance through agents representing the State Farm Insurance group of companies. Insurance in force now exceeds $4,000,000,000; about $90,000,000 in premium income was expected for 1966. Approximately 8,700 agents represent State Farm Life. Direct employees totaling 663 on August 1, 1966, are located at the Bloomington (Ill.) home office and at 21 regional offices throughout the Continental United States and the Dominion of Canada.

### A Nicely Matched Labor Supply

In the years before 1958 the Company entered gradually into electronic data processing as punched-card equipment became more complex. *By 1956, it was using* a magnetic drum computer. In 1958, when a feasibility study indicated the Company could make effective use of a magnetic-tape data processing system, work was begun on system development and program writing. At this time the supply of office help in and around Bloomington, Ill. was nicely matched to existing demands. But it was clear that the firm would need to increase efficiency to handle the continuing growth in the data processing area.

The system undertaken then was designed to reduce clerical work at many points and to speed completion and accuracy of management reports. Substantial elements of the older system continued until mid-1963, however. The time and dollar investment to achieve this system has been greatly underestimated. The personnel in the data-handling area reached a high point at that time, the last half of 1963.

### Hard Core and Variable Employees

The number of employees, both companywide and in the data processing area, is well above pre-automation total. Employment has increased 50 per cent in about 10 years, while insurance in force has doubled.

There is a core number of workers needed to run the computer, who would be required whether the Company had two billion dollars or four billion dollars of insurance in force. If the Company had not grown as it has, clerical employees—the non-computer operators—would have shown a degree of decrease.

### Growth Outdistances Layoffs

In 1967 a new third-generation electronic data processing system will be installed which will have increased capacity and new areas of application. Transition into these areas will be gradual. State Farm does not envision any possibility of substantially fewer employees. Company growth offsets automation layoffs at State Farm.

There *have been* certain kinds of employment changes, however.

Data processing has had some changes in the character of clerical jobs at State Farm. For example, the most complex life policy record now requires almost three inches of a 2,400-foot reel of magnetic tape; an average record takes less than half an inch. In the old system, finding, changing, and replacing the cards in the several files was a tedious manual process performed by a specialist for a certain type of card. Now a specialist in a certain type of record change codes a message by which the computer finds the record, makes the changes and replaces the changed record. Fewer clerks are needed per thousand changes, but increased business has meant more thousands of changes to be made. The Company still can use a good proportion of employees with no more skills than were available 20 years ago, using them in the preparation of data for the computer, in the maintenance of files, and in the general correspondence area.

Fewer operators are required for the computer than for the older tabulating department with its many separate machines, but the reduction is small, amounting to not more then 10 or 12 people.

An area of employment growth is the programming group. In pre-computer days, this department took part of one man's time; now it has 20 employees.

State Farm Life Insurance has not experienced loss of trained personnel to other organizations as severely as the Chicago and Springfield companies.

For the period January, 1958 through January, 1966, the personnel rates of State Farm show a percentage shift away from clerical employees toward supervisory and middle-management.

Several causes lie behind the growth of the middle category.

The absorption by the computer of repetitive clerical tasks is one cause.

The increase in skilled programmers and analysts who tend to fall into the middle group, is another influence.

The continuing decentralization of State Farm into 21 regional offices, creating more units and more supervisors, is another cause.

### No Corrections from the Mindless Machine

The computer definitely has influenced State Farm employment patterns. The importance of having good data put into the system has had some bearing on upgrading of skills. It didn't take long to learn that the "mindless machine" won't correct errors.

There is another causative factor influencing some shift into the middle group. The Personnel Department speaks of it as "Job Class Inflation." This is the tendency to place workers into the job class called for by the salary needed to get them to join your staff.

### Maybe Leaving the Wet Pen Was Worse

It is clear that there just is not enough help available at any price to replace all automation in the life insurance industry—to go back to the quill pens, the scratch pad calculations. The change to the electronic computer probably is not as shocking to the office worker of this generation as the old change from the "wet pen" to the punched cards about 20 years ago.

# IT'S ALL CIRCUITRY AND PAPER

## Electronics is More than a Bookkeeper

In the early stages of the Horace Mann Insurance Group, management realized that to have an efficient accounting and billing operation, the Company would need electrical accounting machines. As the volume of business increased, it became apparent that to issue policies efficiently, prepare premium notices, and record premium payments, the Company would have to shift its attention from the bookkeeping type of machine to electronic data processing computers.

### Computer and Retriever Make a Team

In 22 years, the Horace Mann Insurance Companies have grown to be the largest teachers' insurance group in the world. Combined assets exceed $60,000,000.

Howard Fricke, a Horace Mann administrator, discussed his firm's automation experiences.

Horace Mann is controlled by, and devoted to, the education profession. Its market is limited to teachers and their families. To this specialized market it offers all lines of personal insurance such as life, accident and health, auto insurance, homeowners, income replacement, and teacher liability.

### But Do the Growth Statistics Mean Service

In the past three and one-half years, the combined assets of the Horace Mann Insurance Companies have grown from $20,000,000 to $60,000,000. During this same three-and-one-half year period, however, the total number of Home Office Personnel has increased from 360 to only 430. While the Companies have virtually tripled in assets and number of policies in force, the staff has increased only 25 per cent. Expense ratios have been lowered continually during this same period.

No one has been displaced by automation, although the computer has demanded a different type of worker for more technical, less routine jobs. The Company has its own training program in data processing, and it employs qualified high school students and graduates, and college graduates, and trains them internally in its own system.

For Horace Mann, the computer now fills the function of a bookkeeping machine and has also replaced some of the routine jobs such as typing policies, preparing premium notices, and recording premium payments. As a concomitant advantage the computer also has been able to provide sophisticated management reports.

### Future Plans

What should Horace Mann expect of the computer in the future?

The Home Office staff, as well as State offices and Regional claims offices, should be able to communicate directly with the computer. Producing a customer portfolio, under one account number, should become feasible. This equipment also will make it possible to implement a real time system. This means that an agent will be able to ascertain coverage immediately, examine the policyholder's portfolio, and make intelligent, sincere recommendations for additional coverages. It may permit claims examiners to pay claims within a matter of minutes. It may enable policyholders to obtain a policy loan in minutes.

### Microfilming for Intelligent Correspondence

Yet automation is not limited to computers. Horace Mann recently has purchased a new record retrieval system from Remington Rand, called Remstar. This system permits automation of voluminous numbers of paper files (correspondence and standard forms) that are not compatible with computer operation. At present the Horace Mann employee corresponding with a policyholder must obtain the status of the policy from the computer, but he also must review the policyholder's paper file so that he can correspond intelligently.

The Remstar system microfilms all these paper files and, via closed-circuit video, projects this image in original size on TV-like monitors.

This innovation will permit the Company to completely consolidate all its files. Policy status files will be consolidated on the computer and the paper files will be consolidated in microfilm form.

## WHERE STATISTICS RULE

Automation, Yes, If it Produces Facts

Data assembly in the insurance industry is in a stage of very rapid development, reported John Bolton, director of the State of Illinois Department of Insurance. The use of computers is growing month by month and year by year, and the use of automated statistics is changing the patterns of statistics by which the insurance industry lives, and by which the Department of Insurance regulates the industry.

The insurance industry and insurance departments can be benefited greatly by such automation, but only if it is recognized that computer-produced data does not in any way reduce the rigid requirements of the Illinois Department of Insurance for specific and detailed statistics within prescribed plans and coding systems.

### No Room for Falsies in Automation

Statisticians have an expression, "Garbage in —Garbage out." Or to put it another way, a computer is like a girl's sweater—you can't get any more out of it than you put into it.

All the problems of the insurance industry and the insurance regulator cannot be solved by the computer or the slide rule, as comforting as an assumption to the contrary might be. But decisions must start somewhere, and in fact, they do indeed *start* with the data from these computers and slide rules.

Considerable judgment in the making of rates is called for, both from industry and from the regulatory agency.

### Statistics Are Boss

The judgment of the director of the Illinois Department of Insurance must come from statistics—basic, hard-nosed data. The Illinois Insurance Department has felt that rate adjustments over the past 10 years have been fully justified by the statistical presentations on which the department decisions were made. But the stresses of this situation in the marketplace compel even higher statistical standards. What was good enough last year or even last month must be even better next month and next year. There is no alternative.

# *Learning to Live—and Work—With Automation*

## MAKE MORE, HIRE MORE

But First—Let's Look at Technological Change

### New Equipment Means Growth

"There is no longer any doubt that technological change, expressed in terms of plant and equipment spending, increases employment," states John M. Coulter, associate director of research and statistics, Chicago Association of Commerce and Industry.

Over the past three years there has been a national increase in plant and equipment spending of $25 billion, or 65 per cent. In manufacturing alone, the spending for new facilities has doubled, from $14 billion in 1963 to $28 billion in 1966. Chicago and Illinois have enjoyed more than their proportional share of new plants and equipment.

The heavy spending of the last triennium has been good for employment. Private wage and salary workers have increased by 5,600,000 during this same three-year period, or between 13 and 14 per cent of their total in 1963. In terms of unit economics and expenditure, $4,000 to $5,000 in new plant and equipment will put one additional worker to work on payrolls of private industry.

Despite the massive increase in employment, new equipment and machinery have posed some serious manpower problems for commerce and industry.

### Can the Schools Prepare People?

Private enterprise is dissatisfied with the average products of our public education system. Forty representatives of industry (mostly personnel directors) last year testified to this dissatisfaction. The general complaint was that literacy and mathematical skills are much too low for most jobs.

Products of public high schools and vocational high schools may be as good as they were 10 or 15 years ago, but modern industry places a much more serious demand on learning, even basic learning in the areas of reading, writing and arithmetic, and a much greater demand on special skills than is now being turned out by the vocational high schools.

### Untraining the Vocational Graduates

The employers' outlook for vocational high school education is gloomy. They object to training in machine operation with machines that will not be duplicated anywhere in industry. It would be a logical step for manufacturing companies to supply vocational schools with current equipment so that students could be trained to operate them, but modern machinery might run between $100,000 and $1,000,000 per unit, and this is a lot for any company to give away.

The general comment, "We have to untrain graduates of vocational high schools before we can begin to train them on our machines," is too common to be ignored.

### Suggested Curriculum

Employers suggest as an alternative to present vocational high school curricula, more intensive work with the three R's, and courses in general vocational disciplines, such as blueprint reading, typing, and electrical wiring.

Another method that has worked out very well has been a work program involving the school and a company, through which the students observe how the machinery is used, and then, perhaps, use it in some limited situation.

### On-Job Training Lags, Too

If schools are becoming an anachronism as training institutions, commerce and industry are lagging in their adoption of formal entrance training jobs.

A recent survey of the Chicago Association of Commerce and Industry on the whole range of employment subjects indicates that although on-the-job training has become a significant institution in recent years, it still represents only five to 10 per cent of the existing job openings in the area.

### Chicago—Big in Technological Change

Despite problems of manpower preparation, the employment boom rolls along. The protection against automated unemployment rests with markets for new goods and services.

The State of Illinois has been blessed, during the last three years, with an employment boom which has outstripped the larger boom throughout the United States. Some of this has occurred because of overall marketing considerations. Chicago and Illinois are the largest manufacturing areas of producer durables—the products which go into new plants and equipment—in the entire country.

In 1963, for example, Chicago produced some $6.5 billion in terms of value added by manufacture of producer durables, compared to $6 billion produced in the 17-county New York Metropolitan area, which includes half the State of New Jersey. Part of this output was the machinery and equipment used by the na-

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The accompanying chapter consists of abstractions of the testimony presented by the witnesses appearing before the Hearings on Vocational Education and Manpower Training Programs in Relation to Employment Requirements in Industry conducted October 20 and 21, 1966, by the State of Illinois Commission on Automation and Technological Progress. The testimony was presented in Rooms M-18 and M-11, Drake Hotel, Chicago, Ill. 60611. NOTE: See Appendix for the list of witnesses.

tion in producing technological change.

Chicago and Illinois are not behind in their own technological growth. Expenditures for new plant and equipment within the Chicago area top those in every other metropolitan area from 1954 to 1963, for manufacturing firms, with a total of $6.4 billion in Chicago and $5.8 billion in New York, the nearest competitor.

**But Beware of Unemployment**

Successful as Chicago and Illinois have been, economically, during the last three years, this overall success has been a composite of unparalleled success in some industries and unfortunate failure in others.

There is an urgent need for a serious study and analysis of available statistics for manufacturing employment, plant and equipment spending, and profit as measured by value added to manufacturers.

These figures are available in U. S. Department of Commerce publications about a year and a half after the fact. But nothing is being done to work them over, to make some simple calculations and to draw some necessary conclusions at the present time on a regular basis.

An annual survey of Illinois manufacturers is also recommended, to determine the manufacturers' plant and equipment spending plans, their plans for increases in employment, and their basic requirements for new employees. Investment in plant and equipment usually precedes an employment spurt by a year or two, giving a little forecast of what the employment needs will be in manufacturing particularly.

**No Report Even for the Governor**

The purpose of this survey and of the analysis would be to determine the effect of technological change, as represented by expenditures on plant and equipment; on employment, both production workers and others; and on productivity. Such a survey could point out industries which have not invested in plant and equipment at a brisk rate and are beginning to feel the competitive squeeze. Obsolescence could be identified as both employment and profit softened. Coupled with an annual survey of manufacturers in this State, such an analysis could calculate realistically the need for new employees in future years.

No regular report which measures technological trends and predicts employment needs in this State is now available to the Governor, or to any of the departments of the State of Illinois that might need it.

Private business associations are prepared to conduct this kind of program, using the professional skill and the professional staff that they have accumulated over years.

If it were deemed inappropriate for the Chicago Association of Commerce and Industry or perhaps a combination of associations to do this, the survey and analysis might be conducted under the auspices of either the State Department of Labor or, possibly, the Department of Business and Economic Development.

## THERE'S NEW WORK TO DO

### Tomorrow's Education is Today's Biggest Job

"It's not all money; it's trying to change people's attitudes into a belief that work is noble."

These words describe the goal behind vocational and technical education, in the opinion of John Beaumont, Director of the Division of Vocational and Technical Education of the Board of Vocational Education and Rehabilitation, State of Illinois.

**Purpose: Occupational Training**

The primary purpose of the Division of Vocational and Technical Education of the State Board of Vocational Education and Rehabilitation is to develop occupational training that will assist youths and adults to enter the work force of the State in those occupations that do not require a baccalaureate degree.

A second purpose is to assist employed persons in getting training to help them meet new occupational requirements or get better jobs.

This responsibility is carried out under the direction of the State Board of Vocational Education and Rehabilitation, which is composed of the superintendent of public instruction, who serves as executive officer, and 11 members appointed by the Governor.

Currently, the Board consists of the directors of Agriculture, Labor, Public Health, Mental Health, and Registration and Education, and six public members. The Board takes an active role in setting policy and reviewing activities of the Division. It meets every other month; in the intervening month, a Vocational Education Committee of the Board meets to review, in depth, the plans and functions of the Division.

Through grant-in-aid funds provided by Federal and State legislation, occupational training is conducted in secondary schools, junior colleges, technical institutes, and in special divisions of institutions of higher education.

Grant-in-aid funds are also used for construction, equipment, teacher education, supervision, administration, research, experimentation and other related activities.

The functions of the Division are performed by a staff of professionals located in Springfield and Chicago. These functions include:

- Consulting with educational agencies to help them plan and implement occupational curricula, which are in keeping with the occupational needs of the State, as determined by the State Department of Labor and other informative sources.
- Assisting schools to develop occupational curricula which meet all levels of abilities, to help those with less ability to find employment.
- Helping to assure that grant-in-aid funds are used in accordance with the provisions of Federal and State legislation.

**Responsibilities of the Division**

The Division of Vocational and Technical Education of the Board of Vocational Education and Rehabilitation is responsible for the administration of the following vocational and technical education programs:

1. *Vocational Education Grants*—Grants to schools to supplement State and local funds used under approved State plan for vocational education, including construction of vocational education facilities and related services and activities. Authorized by the United States Vocational Education Act of 1963, Public Law 88-210, passed by the U. S. Congress. Served 152,000 persons in fiscal 1966.

2. *Vocational Education in Special Occupational Areas*—Grants to states and territories to help them support vocational training (less than college grade) in the fields of agriculture, home economics, practical nursing, trades and industry, distributive occupations, fishery, technical education and related occupations, such as skilled technicians. Authorized by the National Defense Education Act of 1958, the Smith-Hughes Act, the George-Barden Act, and supplementary acts. Total served is included with the total of 152,000 served by Vocational Education Grants.

3. *Vocational Education Work-Study Programs*—Grants for work-study plans. These grants cover compensation of students employed in local agencies or some other public agency or institution to allow them to continue vocational education. Authorized by the Vocational Education Act of 1963. Served 6,619 students in 1966.

4. *Vocational Education Research Grants*—An Occupational Research and Development Unit for the State of Illinois, funded in June, 1965 for an 18-month period. The proposal added staff, an advisory committee, a leadership workshop, a research competency workshop, and a basic study of occupational needs for Illinois in the decade ahead. Authorized by Section 4 (c) of the Vocational Education Act of 1963.

5. *A Manpower Development and Training Program*—Operated cooperatively with the Bureau of Employment Security of the Illinois Department of Labor. The Bureau of Employment Security determines the occupation for which training is to be given and selects the trainees. The Division of Vocational and Technical Education arranges for the training which is conducted in both public and private schools. Authorized by the Manpower Development and Training Act of 1962, as amended; Public Law 89-15. Served 8.151 trainees in fiscal 1966.

6. *State Appropriations*—Appropriated as a biennium appropriation and payable from the general revenue fund. Include $9,716,000.00 for distribution to public schools for approved programs in vocational and technical subjects and to State educational institutions offering approved teacher-training courses.

### What Research Prophesies

A research project conducted for the Division of Vocational and Technical Education is evidence of the efforts of the Division to discover occupations that should receive major emphasis in Illinois. This project reviewed 10 areas of Illinois industry, as follows:

- *Primary Metals Industry*—Will grow between two and three times the national average because of rapidly expanding Midwest steel markets. Technological change will create some new occupations, change many others.
- *Health Services*—In the technical and semitechnical categories should double during the next decade. The impact of medical electronics has helped to create new occupations and expand still others within the industry.
- *Printing and Publishing*—Sales are expected to grow at an annual rate of four to five per cent. Growth will be offset by increases in manpower productivity, and so additions to the labor force will be small. Problem-solving skills will replace trial and error techniques in typesetting. Trend towards color work and offset equipment will make chemical background mandatory for an increased number of employees.
- *Electronics and Electrical Equipment*—Will grow faster than any other sector except health services; annual rate of four per cent or more can be expected. Minimum-technology electronics jobs require less than one year of post-secondary training, if high school background is adequate.
- *Agri-Business Employment in Off-Farm Occupations*—Employment increasing, while on-farm employment is decreasing.
- *Food Processing*—Modest sales and productivity increase overall, but the frozen and convenience foods sectors will grow nearly 10 per cent a year; will need graduates qualified for quality control, commercial home economics, and process controls maintenance occupations. Bakery firms will need workers, technicians for making food tests.
- *Chemical Process Plants*—Will experience process automation and instrumentation, increasing manpower productivity as rapidly as sales. Ceramics, plastics, and adhesives plant employment will rise significantly; automation and instrumentation will increase needed operating and maintenance skills.
- *Metalworking*—Will be affected by innovations, the most important of which is numerical control. This development will not obsolete present high school or technical school machine shop facilities; experience and skill gained in high school courses will be applicable.
- *Office Industry Occupations*—Total industry employment will rise nearly four per cent a year during the next decade. Many office occupations with a prerequisite technical background will emerge, including technical secretary, medical secretary, engineer's aide, and archive and library specialists.

### Suggested Curricula

Four core curricula have been identified to prepare students and workers for the new occupations in the chemical and food industries, electronics, the mechanical industries, and the health services.

The Board of Vocational Education and Rehabilitation is moving rapidly into the junior college program as a vehicle for developing this kind of occupational training.

### The Professions Need Aides

The junior college development in Illinois today is an exciting program. In the past the State has not had the institutions to do the job the junior college can do. It has had the universities and it has had the secondary schools, but some fields such as medical technology are neither university nor secondary school subjects. If the junior college becomes a community institution that serves community and State needs, such technical training can be begun. If the junior colleges can make it clear to the young people that the professions need aides, they can move a great deal further forward.

### Cooperation at the Secondary School Level

The Board is also attempting to bring about cooperation between secondary school systems. It is urging high schools in the same area of the State to join together in building a facility for vocational training.

One of the first of these cooperative ventures is out at Sterling, where there is now under construction a facility that will serve initially all of Whiteside County, about eight or nine high schools.

Seven cooperative programs are in operation at the present time. Besides the school at Sterling there is one at East Moline; one at Waukegan; one at Mt. Vernon; one at Decatur; one at Springfield; and one in the City of Chicago.

The State is helping the City of Chicago to build the Westinghouse School. Although it is still under construction, it is already in operation. Students are enrolled.

These schools are planned to offer a wide range of programs, dealing in machine tools, electronics, office work, health work, the graphic arts, auto mechanics, body and fender work, and child day care. The women who come in for basic education bring their children along, and those chlidren are used in the school not as guinea pigs, but as a vehicle to train other youngsters to work in child day care work.

The difference between this kind of cooperative technical school and already existing facilities like Lane Technical High School or Washburne Trade School is that *this is a school designed for youngsters who will not go any farther than high school.*

Another program for the secondary schools is that of training in data processing. An experimental program at Evanston Township High School, to be financed by the Division and by local industry, was approved last spring (1966).

At the secondary level, on-the-job training is probably one of the most effective ways to do an occupational training job. Half a day of schooling and half a day on the job combines education with work, which these youngsters need.

### Automation Ends Work, Makes Jobs

There is a broad gap between the training the State now provides and projected developments in industry. We have not really come to grips with the change in the work force which is taking place in our society.

A report on technology in the American economy states that automation eliminates work and creates jobs. But most of us have not gotten beyond the first point in our understanding of automation. We realize that automation eliminates work, but we haven't come to grips with the significant point that automation creates jobs, different kinds of jobs.

Training for the future requires changes in legislation, school boards, parents, students, and in the ideas, the understanding of all of us.

Last year the State Board put $3 million of Federal funds into construction of the seconday level area facilities mentioned previously. This year, the Board is trying to help the seven junior colleges that have been funded for construction. These are Chicago, Blackhawk, Sauk Valley, Triton, Palatine, Rock Valley, and Rockford.

At the present time there is quite an emphasis in training for data processing equipment and computer installations in the existing junior colleges and in the State's one vocational institute. Vocational Technical Institute, operated by Southern Illinois University, at Carbondale. During 1965-66 these schools trained 2,667 males and 699 females as programmers in data processing.

### Education Needs Leadership

The Division of Vocational and Technical Education itself has been organized to serve teachers and teacher needs. It has been staffed primarily with expert teachers as a teacher consultation agency, not as a planning and administrative unit. It has not had, historically, the kind of personnel who could assume leadership and plan effectively. But the need for leadership is becoming apparent, and reorganization within the Division is taking place. A planning and evaluation unit has been set up. A fiscal and statistical unit has been established.

The Board of Vocational Education and Rehabilitation conducts informal monthly meetings with representatives of the Board of Higher Education, the Junior College Board, and the Office of the Superintendent of Public Instruction. But there is a need for an organization that will represent not only education, but labor and welfare, public aid, and other agencies. The need for some kind of manpower development resource commission in the State has been suggested to the State's Task Force on Education, and is included in its report.

### Making the Training Fit the Need

The Board of Vocational Education and Rehabilitation is trying to coordinate its training programs with the occupations now available. It has put priority on health occupations and technical occupations.

The lag between needs and training has not been caused by lack of equipment or by obsolete equipment. It has been caused by the schools' lack of awareness of the emerging needs of industry, and by the lack of schools themselves.

It is true that large numbers of students are still being trained for jobs which will become obsolete, but this is for lack of an alternative program. You can't really deny students courses in home economics and agriculture unless you are willing to give them some alternative.

Progress has been made in this direction. It could be speeded up if the Division of Vocational and Technical Education had the funds to get some leadership. It should be able to exchange personnel with the universities. At the moment the Division cannot meet the salary schedule of the university people, but it could bring in consultants from the universities.

### Believing that Work is Noble

Funds are necessary to start and equip training schools. Yet it's not all a question of money. It's also a matter of helping people understand that work is noble, whether the worker has a college education or a junior college education or a high school education.

## TAKING THE TRAINING TO THE PEOPLE

### Washington Must Let Springfield Know How

"Many Americans," says Allen Brimm, "particularly those for whom poverty, limited education, and waste of human resources are hand-me-downs from generation to generation, are now gaining new hopes, new skills, and new jobs."

Why is this true?

It is the result of the training these people have been given under the Manpower Development and Training Act (MDTA), according to Mr. Brimm, who is chief of Manpower Training for the Illinois Department of Labor. This training also has met, at least in part, the needs of the nation's employers.

### How this Progress Began

The Manpower Development and Training Act was passed by the 87th Congress early in 1962, at a time when rates of unemployment were high, the size of the labor force was increasing, the impact of technological change was being felt, and skilled and semi-skilled jobs were going begging for want of experienced or trained personnel.

At the onset, the manpower training program was designed to train individuals for these current job openings. And it was a program to help fill the requirements of employers immediately or within one year. Amendments to the Act, in 1963 and 1965, enlarged the scope of the program and increased benefits for trainees. During this time, employment had improved for the general public, but high rates of unemployment persisted for many worker groups, including youth, minority groups, older workers, the uneducated and the unskilled.

Since the passage of amendments to the Manpower Development and Training Act in 1963, manpower training programs have been structured to provide basic educational skills, pre-vocational, educational and occupational training. The 1965 amendments to the Act increased the length of training and extended benefits to trainees. During the first four years of actual MDTA program operations more than 490,000 persons across the nation were approved for institutional training. About 8,600 projects were developed and approved in 50 states, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.

### Administration: Washington to Springfield

Training under the Manpower Development and Training Act provides for institutional and on-the-job training for unemployed and underemployed youths and adults in the facilities of either public or private vocational or technical schools.

Funds are administered by both the Secretary of Labor and the Secretary of Health, Education, and Welfare.

These appropriations are intended to provide two types of funding. The Department of Labor and its state counterparts, which in Illinois is the Bureau of Employment Security, must identify the need for training. The Bureau, which consists of the Illinois State Employment Service and the Division of Unemployment Compensation at the State's Department of Labor, initiates the program by documenting the need for training and the availability of trainees, and then transmitting this information to the State of Illinois counterpart of the Secretary of Health, Education, and Welfare. In Illinois this is the Division of Vocational Rehabilitation. This Division acts upon the Bureau's indication of need to arrange for the actual training to be given.

The State Board of Vocational Education arranges for institutional training, usually working through local vocational education departments of public schools. If necessary, they utilize private schools, both vocational and technical, to provide the necessary training.

The Bureau of Apprenticeship and Training of the United States Department of Labor participates when on-the-job training is the method of providing the training.

The Act provided for one-hundred-per-cent Federal financing for training costs and training allowances to July 1 of 1966. Subsequent to that date, the State must provide for 10 per cent matching of institutional training costs. Matching may be in cash or in kind. In-kind matching is acceptable for training conducted in public schools; cash is required to cover training in private institutions.

The 74th Legislative Biennium provided for an appropriation of $1,036,000.00 for this purpose, to cover the fiscal years July 1, 1966 to June 30, 1967 and July 1, 1967 to June 30, 1968.

### Sixty Skills

As of October, 1966, 11,486 have completed training. Within one month following completion of training, 70 per cent had found employment and were still employed.

From the beginning, Illinois has been among the leading states in the number of trainees approved for and enrolled in training. It now ranks third in the nation, surpassed only by California and New York.

Training has been given in 60 different occupations, including several new occupations created as a result of technological change, such as electronics technicians, programmers, and systems testing laboratory technicians.

### Who Are the Trainees?

Training in Illinois has been given practically in every geographical area, both rural and urban. Seventy per cent of the training programs have been in Chicago; the East St. Louis area leads among the Downstate areas.

About 55 per cent of the trainees enrolled from September, 1962 through June 30, 1966 were male.

Illinois non-white participation in MDTA occupational training was about double the national average. In Illinois, approximately 59 per cent of trainees were non-white. The national average was estimated to be from 29 to 30 per cent of the total.

Approximately 20 per cent of the men and women enrolled in training in Illinois were Public Aid recipients. More than 47 per cent had been unemployed for 15 weeks or more, and 12.7 per cent were underemployed—that is, working less than full time, working below their potential, or soon to be automated out of their jobs.

Since inadequate education has been associated with unemployment, the Manpower Development Training program has attempted to reach as many educationally disadvantaged job seekers as possible. More than 55 per cent of the trainees enrolled have less than high school education; 42.6 per cent have nine to eleven years of schooling.

Reflecting the increased emphasis on initiating training programs for youth, the participation of younger groups (under 19 years or 19-21 years of age) was well above their proportion of the unemployed. Participation of the prime age group, 22 to 44, also is greater than its percentage of the total unemployed in the economy.

At the same time, it is difficult to involve older workers, 45 years of age and older, in training, apparently because of their reluctance to undertake training; because of their lower level of formal education, lower degrees of job mobility, difficulties in meeting present-day requirements; and because of employers' restrictive hiring specifications. In Illinois, only 7.6 per cent of this group has been enrolled in MDT training programs, whereas persons in this age bracket accounted for 25 per cent of the nation's unemployment in 1965.

### The Funding of Fiscal '66

A total of $15,152,604 was allocated to Illinois to cover the training costs and the payment of training allowances for 7,974 trainees in 110 different projects in fiscal year 1966.

(Actually a total of 12,000 persons were enrolled in training programs during fiscal year 1966, but this total included trainees whose work was financed by funds made available from fiscal 1965.)

### Institutional Training Plans for 1967

In fiscal year 1967, the State estimates that it will provide institutional training for approximately 6,584 persons, and covering some 50 different occupational areas.

On the basis of total funds being requested and the Illinois apportionment factor, it is anticipated that the State will receive $11,719,000.00, of which $9,170,000.00 is designated for institutional training and $2,549,000.00 for an unallocated reserve. Funds in a national pool also are available to cover institutional programs developed in redevelopment areas.

The 1967 training plan, which covers primarily the Chicago area but also includes many areas Downstate, is divided into training programs for adults and youths; experimental and demonstration projects; and redevelopment area projects. This State plan really represents about one-third of the needs that have been indicated by employers, as well as needs of unemployed people in Illinois, but available funds limit the work that can be done.

The other phase of the MDTA training program deals with on-the-job training. There were 3,170 persons approved for this training in fiscal 1966. The majority of these were in the skilled, semi-skilled, and service occupations. The estimate for 1967 provides for about 6,000 on-the-job trainees.

### Emphasizing the Disadvantaged

The Manpower Development Training programs are designed primarily for unemployed or underemployed adults or youths. The emphasis is on training for those who cannot reasonably be expected to find suitable jobs without it.

The program emphasis in 1967 is directed towards the disadvantaged unemployed worker in both the urban and rural areas, with 40 per cent of the training to be directed toward disadvantaged adults and 25 per cent toward disadvantaged youths, leaving only 35 per cent of the training for skill occupations.

The Manpower Development Training Act, therefore, will not be able to meet the requirements of employers in Illinois because of this shift of emphasis towards training the disadvantaged.

### Meeting One-Third of the Need

The Manpower Development Training Act requires that training must be oriented toward recognized employment opportunities; its projects are established in response to the current need for labor in particular localities. With the new emphasis on training the disadvantaged, however, the MDTA program can be directed towards alleviating current shortages only in some clerical occupations, repair occupations, medical and service occupations, and, to some extent, semi-skilled occupations.

The program is now geared towards filling approximately one-third of the needs that actually exist in Illinois today. Two-thirds of the current needs will be unmet because of the lack of funds.

### Curtail the Programmer Training

Manpower shortages in emerging occupations and professional, technical, and skilled occupations can be helped only on a very limited scale through MDTA because of the fund limitations. Illinois, as a result, has had to curtail its training of computer programmers, a job which is involved in probably the greatest expanding industry in the country, because of the unavailability of funds and the requirement of maintaining only 35 per cent of training for skilled occupations.

There should be some equitable way of distributing the training so that the program meets the needs of both the workers who need training and the employers who need workers.

### Sorry, They're Already Working

According to Allen Brimm, employers must realize that today they are operating in a labor market where they no longer can get the cream of the crop. They have to be realistic in the kind of people that they want. They have to realize that the kind of so-called well-qualified, well-educated people that they want just aren't available. These people are all working.

The only people left in the labor market today, who are unemployed, are the people who don't have the education, who don't have the skills, who don't have the motivation.

### "Project 3000"

Until the Manpower Development and Training Act Amendments of 1965, training was limited to a 52-week period. Since this period has been expanded it has been possible to put into effect a number of training programs primarily oriented to the disadvantaged.

In the Chicago area, the Illinois Department of Labor established a program known as Project 3000, for the benefit of 3,000 hard core disadvantaged persons. Actually, 2,375 people were phased in during fiscal 1966; roughly 1,000 have finished training; 80 per cent have been placed in jobs.

This is a multi-occupational training project, in which training was given for almost 40 different occupations. The program was predominantly female, but about half of the women were Public Aid recipients, and one of the difficulties MDTA has with female recipients, particularly ADC recipients, is the lack of child-care provisions. If the City of Chicago were to have sufficient child-care facilities, many of these women would be able to take training and also employment.

Oddly enough, it is difficult to recruit males for this program although the greatest placement opportunities are for male trainees.

### Once They Come, They Finish

The dropout rate for this program, between 10 and 12 per cent, is unusually low. The average dropout rate in manpower training programs runs 30 to 33 per cent.

This low dropout rate is the result of the excellent teacher-training program developed at the start of the project, to orient the teachers to the adult student—who is quite different from the younger student these teachers encounter in their grade- and high-school work.

The experience of working in such programs, Mr. Brimm states, suggests that the economic expansion of this country alone will not bring full participation in our affluence to the hard-to-reach, high-unemployment group, those who require exceptional assistance to become employable, reemployed, and self-supporting citizens.

### Paying the Cost of Training

Up to fiscal 1967 the cost of MDTA training has been 100 per-cent Federally financed. Training is provided without cost to trainees, and they may receive a training allowance of $44.00 a week. This may be augmented to $74.00 a week, depending on the size of the trainee's family. Youths between the ages of 17 and 22 who do not qualify for these larger allowances may still receive $20.00 a week in allowances if they are high school graduates or have been out of school one year and are enrolled in a special youth MDTA project.

For on-the-job training programs, the employer pays the trainee while he is in training with the employer.

Since July 1, 1966, states have been required to match Federal funds for training costs at the ratio of 90 per cent Federal and 10 per cent State funds.

During the time that MDTA programs were 100 per cent Federally financed, Illinois made full utilization of these funds in developing training programs. The 90-10 matching still provides the most economical financial arrangement for the State. The training allowances are still 100 per cent Federally financed; the State pays 10 per cent of training costs alone.

### E Pluribus Unum

There are approximately 10 different Federal acts which provide training provisions. Each year the State is required to develop a plan indicating the scope of the training which is to be developed. It is necessary that this plan be developed in cooperation with the various agencies concerned with training: The Office of Economic Opportunity; the Illinois Department of Public Aid; the Department of Vocational Education, and The Vocational Rehabilitation Service. This planning is necessary to insure maximum utilization of State and Federal funds, to avoid overlapping and duplication, and to make the best use of training facilities.

There is no overall coordination, however. Guidelines are needed to permit cross-funding and pooling of funds, so that the State can use its funds in the greatest possible way for the training of unemployed persons.

A task force in Washington is now working on developing procedures for coordinating funding and fiscal problems as well. Washington will have to let Sprinffield know how it can be done, but coordination is imperative for any future training program. Part of the answer may be a State coordinating committee, where representatives of all agencies with training funds could meet to make the best allocation of the available funds.

## APPRENTICING FOR AUTOMATION

### Where Do Craftsmen Come From?

#### Development of Skilled Craftsmen

Two witnesses represented the Bureau of Apprenticeship and Training of the U. S. Department of Labor at the hearings, Thomas Augustine, regional director, and Joseph Sullivan, Illinois State Supervisor of the Bureau.

The purpose of the Bureau since 1937 has been to develop, promote, and register apprenticeship programs to assure that this type of training will be of high quality, enabling the apprentices to become skilled craftsmen, fully able to meet all of the demands of their trade.

Apprenticeship is a type of on-the-job training. An apprentice learns on the job for two to five years, at the same time receiving related class instruction in a school either provided by the public school system or set up under the auspices of the trade. Apprentice programs are sponsored, in some instances, by the employer. In some of the trades, it is characteristic that sponsorship is by the Joint Committee, on which both labor and management are represented.

#### Operations in Illinois

The Bureau has a relatively small staff in Illinois with two major responsibilities, first, to serve as consultants to sponsors of apprenticeship and seek out new sponsors, and second, to develop on-the-job training as a part of the MDTA (Manpower Development Training Act) program. This agency has the responsibility of certifying the need for training on the basis of labor market information and the availability of trainees.

Besides its two principal areas of operation, the Bureau works under the Apprenticeship Act. It also is involved in the Civil Rights Act, which charges it with the responsibility of seeing that there shall be no discrimination in any apprenticeship program in operation anywhere in the country, and in the Selective Service System, whereby apprentices who are being trained are given an opportunity to stay out of the Service until their training is completed.

#### On-the-Job Training with MDTA

On-the-job training programs are the one sure way to get people on the job, and also the cheapest way. The Bureau deals directly with managers and manufacturers to create the job opportunities and to get jobs for those people who are unemployed and disadvantaged.

The Chicago Committee on Urban Opportunity, the Woodlawn Organization, the Chicago Urban League, the Midwest Community Council, and the YMCA Jobs Project are specific Chicago area programs which assist the Bureau in setting up on-the-job training opportunities, acting as prime contractors with local companies in their area.

#### The Road to Apprenticeship

Apprenticeship programs must meet certain standards of the U. S. Department of Labor if they are to be registered. They must provide a specifically outlined course of class training and on-the-job training; they must provide a progressive wage and meet other standards, such as objective selection of apprentices.

The program sponsor must notify everybody involved—the minority groups, the school system, and the Employment Service—when it is going to hire apprentices, so that anybody interested can apply for the job. Once the individual is selected, he becomes a member of the union, if there is a union involved, and he is subject to the rules and regulations, just like any other beginning apprentice. He is under the jurisdiction of the Joint Apprenticeship Committee during the term of his apprenticeship. When he completes his training, he gets his certificate of completion and he gets his journeyman's card.

### Pre-Apprenticeship Programs

Pre-apprenticeship training programs have been established by the carpenters and, in the metal trades, under Manpower Development and Training Act funds. Qualified individuals are taken into a school program designed by manufacturers for actual on-the-job training for one year; then they are referred out to the shops, and they get one year's apprenticeship credit for the time they spend in the school.

### Apprenticeship Information Centers

The Federal Government is making a special effort to see to it that minorities are given equal opportunity in all trades.

The U. S. Department of Labor has been working with the Illinois State Employment Service, to set up apprenticeship information centers throughout the State. There is one now in Chicago. There is another one being established in St. Louis, Mo., which also services the East St. Louis, Ill. area. Their objective is to find as many minorities as possible who would qualify for the trades and refer them to the trades that would be hiring the minorities or hiring apprentices.

### Needs the Legislature Can Fill

The development of any training program—the MDTA program as well as the apprenticeship program—requires a reliable estimate of future manpower needs. A refinement of labor market information on the local level would benefit the work of the Bureau in projecting future needs.

## CONSTRUCTION UP, EMPLOYMENT DOWN

### Automation and the Building Trades

The effect of technological change on the building trades is indicated by what appears to be a permanent drop in membership in these trades. These changes were documented by Thomas Nayder, secretary of the Cook County Building and Construction Trades Council.

Six years ago the Council had a membership of building trades mechanics in the metropolitan community of Chicago numbering 125,000 to 130,000 at a peak period. Today, at a peak period, membership is between 90,000 and 100,000 workers. At the same time, this smaller number of workers is doing a greater square footage and dollar volume of construction than ever before.

The employment drop-off has been greatest in skills easily replaced by machinery, such as material handling, and in skills that have become less popular, like the mortar trades.

The decline in worker personnel has stayed at this level for at least two years, and this smaller number will be able to produce even more as mechanization occurs.

Not only building projects will be affected. Road construction, as an example, now uses a machine that applies and prefinishes 60-foot-wide segments of concrete. Only two or three men are needed to do the final touchup.

### Effect on Apprenticeship Programs

With a smaller work force doing a greater amount of work, finding apprentices is difficult and will be even harder in the next few years. Apprenticeship is not only employment. It is an in-depth development of the potential of the worker in a particular field. It is not a training program for a special type of operation. It is a skill-building training period that delves deeply into the worker's capacity. When a skilled worker's job is eliminated and he must turn to another facet of his trade, he has the background, through apprenticeship, to adjust to a new facet of his trade.

The Council has managed to develop, through collective bargaining agreements, industry-wide contributions by employers toward the expenses of operating apprenticeship programs. In this way every employer who employs a man of a particular trade makes some small contribution toward the overall industry development of apprentice and skilled workers. Collectively, these contributions handle the needs of the apprenticeship program.

This program makes the employer more receptive to employing apprentices. In the past it would cost an employer an estimated $5,000 annually to take a man with beginning skills and train him as an apprentice in the particular trade or industry he was entering. As a result, the employer was frightened away from employing apprentices, particularly when there was a wealth of manpower available.

### Attitudes of Youth Toward Apprenticeship

Schools are oriented toward academic, rather than occupational, fulfillment. Young people do not want to come out of high school and go into another training period unless it promises professional capability at the end. Those in academic high schools do not know that being a plumber or an electrician or a pipefitter is still rewarding work.

Those in vocational high schools with work study programs simply enter the industry full-time after graduation. They don't have to take on another training program.

Instead of great numbers coming into apprenticeship programs, actually only a small percentage, usually the college drop-outs, enters such a program.

There is an oversupply of recruits for the glamour trades, such as the electrician or pipefitter. Other trades—painting and roofing, for example—need recruits, white and Negro.

### Future of Construction Industry

During the next 10 years the work force of the nation's building industry will probably increase 25 per cent because the demand is going to be greater. At the same time, recently developed engineering techniques will be used more, but probably few new ones will be developed.

The trend is now toward off-the-site development. Panels of brick or concrete can be brought to the job and lifted into place.

The impact of automation reaches even deeper than that. The engineering for a job can be done by a machine rather than by an engineer. He feeds his material into a computer that develops data on the stresses and the material requirements and specifications. In fact, an engineer can even pour a specification through this machine, and it can come up with the actual engineering drawings that would be needed for a particular structure.

It seems that the impact of automation has reached into management. There will not be a blue collar-white collar relationship anymore. The man who may be the plumber today may be the key employee of a firm not too long from now, because the owner will be able to get all his engineering data, his estimating work, and all that former office type of work done through mechanization.

### Changes Ahead for Labor

The impact of mechanization on the construction industry will bring about many changes. There may be a whole realignment of the working period. The eight-hour day, and the 40-hour week, in a few years, may not be an appropriate standard for employment.

Construction equipment has no emotion, no stress. It can work around the clock. If the machine runs 24 hours a day and seven days a week, the manpower working with it is going to have to be available on that basis, as well. Extended daily employment periods of 24 hours may be the result, with rest periods and then, every third day, a recurrence of the cycle.

### Challenges for the Legislature

There will be plenty of leisure time available to the worker. What do the workers do with their leisure time? The Legislature can see to the preservation and development of State-supported facilities to be available to the worker during these periods of leisure time.

Another area of consideration for the Legislature is the development of a retraining area for journeymen.

The Legislature should support a program to provide the reinsurance of benefit programs, pensions, and other vested interest programs of workers, when their industry succumbs to automation or technological change, or when workers have to change their jobs to another area or another industry.

Some liaison between workers themselves and the Legislature would help in developing means to handle automation. A committee of Legislators and labor would help maintain communication between these groups.

### Civil Rights and the "Open Door"

The Civil Rights movement has attracted some attention to apprenticeship, especially in the building trades. The claim has been that these are jobs that the minorities have had small opportunity to acquire.

In the early history of Chicago, the Negro played a great role in the construction trades. Trade skills often are handed down from father to son, but the skilled Negro frequently was earning a greater income than his neighbor, and was able to bring his son into a higher degree of education. The Negro doctor and lawyer came from these families, and after a few years of this, the building trades ended up with no Negroes in their apprenticeship programs. The door has always been open to them.

The Building Trades Council, in cooperation with the Bureau of Apprenticeship and Training, and the Building Construction Employers Association, has set up an apprenticeship information center, to indicate compliance with Federal equal opportunity regulations. Each trade that has a registered apprenticeship program has been found to practice equal opportunity, and many of them now have apprentices of the minorities.

In Chicago, there has always been a large number of Negroes in the journeyman category of certain trades—electricians, plumbers, plasterers, bricklayers, cement masons. Currently, the problem is that the building trades in general are not able to excite interest within the minority community to attract into apprenticeship those who have the entry skills.

## GO TO SCHOOL TO GO TO WORK

### Teaching Vocations in Chicago

Education is continuously being made more applicable to the world of work, stated Dr. Arthur R. Lehne, Assistant Superintendent in charge of Vocational and Practical Arts Education, Chicago Public Schools.

Starting in the kindergarten with basic concepts of the world of work, economic understanding and competencies are developed systematically through the elementary and high school, culminating in the mastery of saleable vocational skills. All high school students must be given the tools with which to earn a living. More than 80 per cent of them will not acquire college degrees.

Eighty-seven million Americans will be employed full-time by 1970; 26 million of these will enter the labor market during the current decade.

The increase in the group younger than 25 that is becoming part of America's productive force is 60 per cent greater than in prior decades.

More than half the labor force expansion between 1960 and 1980 will come from the more disadvantaged groups, typified by low incomes, high unemployment, and inadequate parental education.

Advances in technology will provide increased employment for those with the most education and training. For example, more than 20,000 technicians (and replacements) are need annually in Illinois.

### Preparation before Graduation

An individual cannot be prepared permanently for the world of work in his first 20 years. There must be schools prepared to update, train, and retrain him.

All high school students should be required to complete a vocationally oriented sequence of courses. Typical sequences might be prescientific, pre-technician, pre-business, pretrade, occupational preparation, or homemaking.

Every person has a right, as well as an obligation, to become economically competent. This objective can best be obtained through good vocational education.

In order to make vocational education comprehensive, new curriculum materials are being developed in all major areas of vocational education: trade and industry, business, home economics, health and service occupations. These materials reflect careful study of needs of the economy; they have been charted by working conferences involving business, labor unions, education, and government representatives.

The linking of practical work experiences with classroom instruction is vital to vocational education. It eases the transition from the academic world to the world of work. Students are more likely to remain in school if they can understand the relationship of education to making a living. In some instances, the money from the work provides the actual sustenance which is necessary for the student to remain in school.

### Relating Education to Earning

In June of 1966, the Chicago Board of Education had 86 vocational programs in operation; in September, 1966, the number had increased to 117. Some of the fields covered are office occupations, industrial education, and home-economics-related occupations.

*The home economics program* has been completely revised; now it involves the parent with the child in child-parent needs.

*The business education program* is being revamped to include four well-defined vocational business sequences: clerical, secretarial, marketing and systems, which includes accounting and data processing.

*Training for health occupations* is under way. Chicago now has 142 junior and seniors girls from 28 different high schools working towards the examination for licensing as practical nurses by spending half a day in school and half a day in the hospitals.

*The trade opportuntiy program* invited boys from inner-city general high schools, during the summer of 1966, to talk with the administration about developing specific vocational skills. A program at Dunbar offers an opportunity to train people for competencies they did not have when they left school.

*Pre-apprentice evening high school programs* have been developed, particularly for assisting members of minority groups to develop skills and competencies at the post-high school level.

A new year-long program provides for *the development of craft skills for veterans.* In cooperation with the Bureau of Veterans Training at the Dunbar School, Chicago now offers a full program for them in such craft fields as these: plumbing, printing, auto mechanics, electronics, and aviation electronics.

About 2,400 people are in Chicago's *apprenticeship programs,* all at Washburne Trade School. There is a small program at the Chicago Vocational School and one at Prosser, in connection with the Tool and Die Institute. Additional programs are needed. Enrollment should be increased by at least 50 per cent.

### New Schools Needed

Enrollment in vocational education is growing. Vocational schools show a substantial increase in membership, and the general high schools are increasing their vocational offerings in several areas, reflecting increasing demand for saleable skill education. New and improved facilities are needed to keep pace with the demand. General high schools will be designed to serve an ever-increasing percentage of pupils in need of vocational education.

Westinghouse Vocational High School, an area high school now in partial use and under construction, delineates a new aspect of vocational education. Its one unit will provide more meaningful programs for more different educational needs than any other facility in America. There will be programs there for the handicapped pre-schooler. The largest program will be for the secondary-school pupil. Adults will go there for literacy training or for training in general or specific skills.

The facility will be provided at an initial cost considerably below that of the construction of a very ordinary high school facility for the number of students involved. The cost will be around $5½ or $6 million.

Another new school, Jones Commercial High School, will be the best-equipped of the few public vocational schools in America exclusively dedicated to business training and education.

### Money is the Root of All Education

No city in America has been able to finance the equipping of its vocational facilities to the degree that they should be equipped.

Jones and Westinghouse Schools will contain the latest equipment and the right kind of equipment, pointed towards the future. Much of this will be bought through local and Federal monies. Much of it will be contributed. A comprehensive plan is being developed to reequip and update some of the older Chicago schools. Building needs and equipment needs run somewhere in excess of $800 million.

Vocational programs should be doubled and tripled. Ten million dollars will go a long way toward the goal in terms of the installation of data processing centers.

One phase would be to install five data processing centers that would serve much of the school system for those in need at a cost of about a half million dollars.

Several million dollars would be involved in bringing a complete system of modern office machines into the schools, but using that equipment in industry on a school-industry cooperative basis would be feasible.

Some form of State aid, perhaps on a matching basis, could ease the tremendous pressure on the local taxpayer to provide these programs. Research and curriculum money from the Federal government directly to the local school system is necessary to develop and implement the vocational education program.

### Teachers Needed Money and Teaching

Chicago is facing a real crisis in terms of teachers. Forty shops were closed this year because there was no teacher in the shop. Some changes will be needed concerning accreditation of schools relative to teaching personnel, and at the State level, changes will be needed relative to the issuance of temporary teachers' certificates. Such changes should concern the use of supportive personnel with less than the conventional educational attainments.

A proposal has been made requesting funding to provide for a teacher training program for vocational education teachers. Several difficulties exist at this point. The cost would be high because the prospective teachers would require some kind of stipend. There is also the problem of attracting to the school system the kinds of teachers needed to man both existing and proposed programs. In addition, Illinois needs to upgrade and uptrain and upeducate the present vocational teachers to the changing technology. It also necessary to get teachers back into the trades they are teaching to gain new experience. They need encouragement through the utilization of modern machinery and bright shops.

Until the schools make their vocational facilities the finest facilities in the school, they will not really be meeting the needs of the times.

### New Approaches through Education

In many cases the minority group youngster has been misguided. Somewhere along the line, he hears that *the* road to the good life is through the avenue of college.

This is just sheer nonsense. There are many roads to the good life and one of them can be travelled by gaining competence in a skill and getting satisfaction from a job—including the satisfaction of economic stability. If members of a minority group or any group turn aside the possibility of developing such competence through vocational offerings, they are losing a real opportunity. One of the big problems in today's education field is helping the public understand the importance of this kind of education and training to the individual and to our whole society.

## SEEING THE CHANGES BEFORE THEY CHANGE

### Unions . . . Can Help Industry . . . Can Help Schools

The importance of a constant liaison between industry and the manpower training groups was stressed by Paul Zimmerer, Executive Director of the Mayor's Committee for Economic and Cultural Development.

In 1962 this Committee and the Chicago Association of Commerce and Industry prepared a series of studies on automation. The purpose was to determine the impact of automation within industry groups and to gain an insight of Chicago's future needs. It then became important to analyze changes that have occurred in Chicago, in terms of jobs and the location of industries.

The result of these recent studies is the Mid-Chicago Economic Development Study. This study shows that there has been very little relationship between industry demands for skills and the manpower training policies of the schools. The study indicates a need for closer relationship between industry, the unions, and the training programs.

There is no coordinating instrument available at this particular time. There has to be a closer liaison, right now—first, to make up the gap between needs and training, and second, to try to anticipate changes.

### Communication Within an Industry

Certain industries do maintain continuous programs of assessing technological change. The printing industry is such a group. The Graphic Arts Council has representation from the printing industry, the advertising people who use printing, and the labor unions. They are working as a cooperative group to try to anticipate changes and prepare for them. This Council is trying now to accumulate about $50,000 for the research necessary to direct its efforts to maintain the industry here in Chicago.

### Communication Within an Area

The Mayor's Committee worked with the Department of Public Aid in an experiment to develop a similar relationship between the needs of industry and adequate training. The Negro community, in particular, needed to be trained in skills which had a future. A program was developed to train ADC mothers in keypunch.

With the cooperation of a private group, a school, the Cook County Department of Public Aid, and a number of industries here in Chicago, who suppied some of the equipment that was required, about 40 women were put into a training program. The school trained them, and then it purposely overtrained them, in order to make the women so proficient that they would be acceptable to industry even if they were not high school graduates.

These women have not only found jobs, but in some instances, have been used by their companies as supervising trainers for people who come in from other keypunching schools. During the six to nine months that the Cook County Department of Public Aid has had the program in existence, it has trained and placed 80 or 90 people. Entering industry, these women have earned roughly $4,000 a year.

### Someone Who Cares

Counseling is extremely important with people in training. One concept is to develop a skill center, where a student has access to a counselor as he goes through his training program and even after he is placed in a job. If the worker finds himself undertrained, he can go back to the counselor and perhaps even back to the school.

### How Municipal Planning Affects Manpower

There is no segment in society that cannot be trained for a fairly high level of skill once basic reading and writing skills are gained.

As far as the Negro community is concerned, jobs should be close to the place in which people live. Regardless of training, if a person is reluctant to travel too far from his own home, he will not do so.

Part of the program of the Mayor's Committee is to bring back into the City some of the industries that require the skills which Negroes have acquired. A balance between the City and the metropolitan area is desirable so that as people adjust to the changes within an economic and social system, there will be opportunities for them wherever they go.

### Coordination Needed

Any manpower training program must be aware of every change which occurs in every single industry. They cannot simply review the program every six months, six years, or four years. This has to be almost a constant review. There has been a constant liaison between manpower training and the industry, almost on a day-to-day basis, because changes do occur almost that quickly in some industries.

Coordination is necessary to avoid duplication of programs and, where necessary, to combine programs.

There are several excellent programs under the auspices of, for example, the Chicago Association of Commerce, the Urban League, the unions, and some community groups. The State Employment Service has some excellent programs, but in many cases they are going in different directions in their attempts to hit the same goal. The good aspects of each of these programs are lost because no one program can benefit by the good aspects of another program.

The role of coordination is an extremely important public function.

### Establishing this Coordination

The local agencies in Chicago, both public and private, plus the Federal government, are at the present time considering a coordinating arm for the various manpower training programs. The public school system has its own arm of coordination for those enrolled. What is needed is coordination of training for those who are out of high school, or have dropped out, and for the "oldsters" from 20 on up, who have been displaced by automation or by economic change.

### Basing Decisions on Economic Understanding

Most cities are eventually going to need a strategy board. The rapid change that occurs in a city's economic system, affecting training jobs, and location of industry, should be anticipated by the chief executive officer of a city. He must have information about these changes available to him so that his decisions can reflect anticipated changes within the economy of his area.

A yearly economic report ought to be made, indicating trends within the economic system of both the City and the metropolitan area.

The chief executive of a city still will have to make his own decisions based on how he interprets public reaction, how he interprets need, and the anticipation of that need in the future. That is his basic forte, but it is up to the technicians and the experts to give him the facts and some concept of reaction.

## THE BLACK MAN'S BURDEN

### Obstacles in the Schoolroom, Barriers on the Job

A two-year study of the Negro labor market in Chicago, discussed by Bennett Hymer, research specialist on Employment for the Chicago Urban League, shows that the major problems facing the unskilled Negro worker in the Chicago labor market today are: first, lack of skills; second, lack of jobs.

The impact of automation and technological progress in the Chicago labor market has been to decrease the number of unskilled jobs while increasing the number of semi-skilled and skilled positions. These new job openings are out of reach for many Negro workers, primarily because the schools have failed to equip Negroes for the realities of modern-day employment requirements.

Also, new jobs usually are filled by employers upgrading their present labor force. Since Negroes, in many cases, have been excluded in the past through job discrimination, they automatically are denied access to these new jobs.

Given the fact that Negroes in Chicago overall receive a poor education—which is indicated by the fact that 50 per cent of the Negro people in Chicago high schools fail to graduate, and many that do graduate cannot effectively read or write—and given the fact that Negroes who can meet basic employer entrance qualifications often face discrimination once they are on the job, the inevitable outcome is that the Negro worker has not had equal opportunity for the jobs that technological progress has brought.

### The Problem of Inferior Education

The high schools are failing to educate people. Not enough money is spent for each pupil. There are not enough experienced teachers. There is overcrowding in the classrooms.

The expenditure for each pupil is less in the Negro schools than it is in the integrated schools, and it is less in the integrated Chicago schools than it is in the all-white schools. The quality of education offered in integrated schools is always higher than the quality of education that is offered in Negro segregated schools.

Drop-outs will not be totally eliminated through any boosting of the quality of education available to them, but in order to reduce their number we must not only increase the expenditure per pupil so that it is equal for both whites and Negroes, but raise the expenditure per pupil for all pupils, regardless of color.

### The Failure of Vocational Education

In regard to vocational education as it exists in the Chicago schools, many of the programs are outdated or underequipped.

As for vocational counseling in the Chicago schools, the pupil-counselor ratio is 350 to 1. The counselor is required to have three years of teaching experience at the level which he counsels. The pupil-counselor ratio will not be reduced to a reasonable level, such as 50 to 1, unless this unrealistic requirement is changed.

Because the pupil-counselor ratio is so high, counselors do not have time to acquire the relevant information about job openings for their pupils. Most of the time, they use 10- or 15-year-old information in counseling Negro pupils about the labor market, assuming that the only jobs for Negroes are as postal clerks or mail order house clerks. The currently less discriminatory attitudes of the unions have not been communicated to the vocational counselors and to Negro youngsters.

In the building trades, because of entry restrictions that result from a variety of mechanisms, there are only 143 Negroes out of a total of 2,000 apprentices. In the building and trades unions in Chicago, probably two or three per cent of their labor force is Negro, whereas the Negro is about 11 per cent of the total Chicago labor force. The unions say the door is open, but they mean they are not discriminating as much as they used to.

A study last summer indicated that the unemployment rate for recent Negro high school graduates was about the same as the unemployment rate for Negro high school drop-outs. In other words, whether or not a Negro youngster had finished high school did not affect his chances of getting a job.

### Fewer Jobs, Less Money for Negroes

The market for unskilled workers in Chicago, under the impact of technological change, has been narrowing. Discrimination serves as a rationing device, allocating the number of employment opportunities disproportionately between whites and Negroes in favor of unskilled whites. Negroes usually have to take the less favorable employment opportunities, which are usually found in the declining industries, where there are lower pay scales.

A recent study indicates that Negro janitors in Chicago earn 10 cents an hour less than white janitors, while Negro material handlers earn 32 cents an hour less than white material handlers. Yet a comparison of both groups, the unskilled white workers and the unskilled Negro workers, shows that the Negro workers actually have the edge in terms of age, length of residence in Chicago, education and work experience. Even the results of some of the current on-the-job training and manpower development training programs show that the post-training earnings of Negroes who complete the training are 20 cents an hour less than the post-training earnings of white graduates, even though Negroes in the program are better educated than the whites in the program.

### Negroes Come, Jobs Disappear

If present trends continue, the future impact of technological progress in the Chicago labor market should be a steady decrease in the number of jobs that are available for unskilled workers.

Clerical jobs will be the next major area of employment to face automation. It is precisely this area of employment that Negroes have just been entering.

What we may be faced with is a situation where Negro workers are earning the right to jobs at the time when the jobs are disappearing.

This description of the impact of technology on the Negro worker is supported by the latest estimates of unemployment. According to the September News Digest (1966) of the U. S. Department of Labor, the Negro unemployment rate increased from 7 per cent to 8.2 per cent during the period April to August, while the white unemployment rate during the same period remained constant at 3.4 per cent. This increase in the Negro unemployment rate occurred primarily among unskilled Negro workers, for the report also shows that the unemployment rate for all unskilled workers rose by 1.1 per cent.

This increase in the Negro unemployment rate has occurred during the tightest labor market since the Korean War, and has occurred in the labor market where there are laws against discrimination, special training programs in operation, and also heavy conscription into the Army of young Negroes who would ordinarily be entering the labor force or who have just entered the labor force. Without any of these, the Negro unemployment rate would be even higher.

### Three Steps to Take

To counter these conditions, first, we must double the budget of the Chicago schools so that Negroes can acquire the necessary amount of education to prepare them for today's and tomorrow's jobs. So long as the public schools in Chicago educate Negroes to be unskilled workers, they will continue to be unskilled workers, and they will continue to be vulnerable to the impact of automation and technology.

Second, we must increase the number of workers that currently are being retrained under OJT (On-the-Job Training) and MDTA. In Chicago at this moment there are roughly 2,000 Negro workers under these programs; yet there are approximately 75,000 Negro workers who need retraining.

Third, we must increase the number of apprentices in the Chicago trade schools to an amount that is proportionate to the Negro population of Chicago.

Action on all of these should be immediate, and it should be effective.

## WHO ARE THE POOR?

### How the OEO Fights Poverty

Robert I. Shackford, Deputy Director of the Great Lakes Regional Office of Economic Opportunity and also its manpower specialist, described the psychology of poverty.

The purpose of the Economic Opportunity Act is to attack the causes of poverty, from whatever they result, wherever they are. Its basic programs fall into these categories:

**1. Manpower:** Under the manpower, or human resource, category is the Job Corps, consisting of urban training centers. Conservation centers also are in operation. The Neighborhood Youth Corps is administered by the Department of Labor. Under the Community Action Program, one of the titles of the Economic Opportunity Act, are a great variety of programs, some of them manpower oriented.

**2. Education:** Project Head Start and Upward Bound are administered by the Office of Economic Opportunity. An adult basic education title is administered through both the Community Action Program of OEO and the Department of Health, Education, and Welfare.

**3. Economic Development:** The Office of Economic Development conducts a rural loan program and a small business development center program.

In addition to all these programs that can fall into categorical headings, there is the VISTA program, Volunteers In Service To America, which provides trained volunteers to assist in areas where there is a high incidence of poverty.

### Who Needs This Help and Where?

Nationally, 40 per cent of the 32 million poor are under 15 years of age. An additional 25 per cent of the poor are 55 years of age and over. This leaves approximately 35 per cent of the poor population within the technical age groups where manpower and economic development programs are pertinent.

One of the characteristics of the poor that makes them difficult to educate is that they are unreachable, in the sense that they live in out-of-the-way places or in urban ghettos. Rarely are they able to travel out from these places. They are unreachable psychologically, in the sense that they are denied access to what the rest of the world takes as a matter of course.

One of the main features of all of the programs in the war on poverty, then, is reaching out to the poor. That is to say, the programs take place in areas of high incidence of poverty. In the City of Chicago, the urban progress centers are under the control of the Chicago Committee on Urban Opportunity, which is financed under the Economic Opportunity Act.

#### No Rags to Riches Since '45

Another characteristic of the poor is their general distrust of those in the majority, of those in the more affluent segment of the nation. The gap is widening between the poor and the affluent because the escape route of unskilled and semi-skilled jobs is, by and large, closed to large numbers of poor. The old rags-to-riches story has not been true since World War II.

Training programs such as MDTA (Manpower Development and Training Act) do provide subsistence payments, but the amount provided in such training programs is not nearly enough to permit a man and his family even to survive during the training period. That is why such programs have high dropout rates; a man will take an offer of low-paying work rather than wait to be trained and earn more per hour, because he is faced with a hungry family.

A typical family of four, in a big city like Chicago, has to have more than $5,000 just to maintain a decent level of living. This comes to about $100 a week. Under MDTA a person may get subsistence allowances ranging from $44 to $74 weekly. But if the goal is to restore this man to a fully productive life, then he needs a big enough subsistence so that he can survive while he is in training.

The escape routes from poverty are closed not only to those who are technically unemployed or presently on welfare rolls, but also to a vast number of people who are marginally employed or underemployed, and whose poverty is harder to see because they do not present themselves visibly in any of the general categorical programs that are tax supported.

The lengthening of training periods and the lengthening of education periods cut off even more people who normally would be expected to find their own way out of their poverty-stricken situation.

#### Jobs, Not Schools, are the Place for Training

Training is something that should be done on the job rather than in schools.

Training in schools is an extraordinarily expensive thing to do. With funds limited, it is important to get as much training per dollar as possible. In the current year, a very substantial fraction of the money of the Manpower Development and Training Program is going into on-the-job training. This is an excellent direction.

A second difficulty in training is that many employer requirements are not really related to performance.

A third difficulty is that too little emphasis is placed on job development. It is necessary to educate employers to modify their job requirements.

Those training programs that are sponsored by the big companies, other than those that are financed through Federal programs such as that of the Brunswick Corporation in Chicago, are general programs to produce people to work for them in the tight labor market.

The only direct manpower program under the OEO is the Job Corps. At the moment, every trainee who comes out of the Job Corps is being snapped up.

#### What Programs Succeed?

The poverty programs that appear to hold most promise are those that provide multi-service centers in urban areas of intense poverty or that provide mobile services to people in rural poverty-stricken areas. The most successful programs focus on the primitive needs.

Health programs under the Economic Opportunity Act succeed because, for the first time, they do try to bring comprehensive health care to the people who need it. The legal services provided under the Act bring adequate legal counsel to those who need it.

Poverty has many origins, and among these origins are racial prejudice, unrealistic employment requirements, and inadequately financed remedial programs.

# THE STATE AS TEACHER AND TRAINER

## Public Aid is More than Money

The number of persons receiving Public Aid in Illinois has *decreased* by 10 per cent, while the number across the nation has *increased* by approximately the same percentage. William Fishback, assistant chief of the Division of Downstate Operations and acting superintendent of Recipient Training and Education for the Illinois Department of Public Aid, explained the relationship between vocational training and this decline in the size of the public assistance rolls. His discussion emphasized activities of the 101 Downstate county departments that administer public assistance programs.

### A History of Helping

In the early days able-bodied people worked out their public assistance grants on various community projects. Such work-training programs still exist. Downstate there are now approximately a thousand individuals in work ranging from township roads to parks.

Some individuals formerly assigned to this type of project are now being trained. One result of the adult training programs, begun in 1962, has been a decreased case load for caseworkers.

The number of persons receiving Public Aid in Illinois has declined by 10 per cent. Nationally, the total number of persons on public assistance is up approximately 10 per cent, and among some eight or nine other populous and industrial states, such as California, New York, Michigan, and Pennsylvania, individual case loads have increased from 30 to 50 per cent.

Of all individuals receiving public assistance, those receiving Aid to Dependent Children are the prime potential as far as training and retraining are concerned. This group consists of roughly 3,000 ADCU (Aid to Dependent Children of the Unemployed) men and 35-40,000 ADC women. The primary concern now is the potentially self-supportive women on ADC, who have the abilities to find and keep jobs or who need further education and training before they are ready for employment.

### Planning with an Eye for the Ladies

Long-range plans of the Department call for the provision of education and training facilities to recipients in all counties of the State. During the past four years full-time adult educational centers have been opened in six areas in the Downstate counties. A comprehensive day-care center offers the basic education, the higher academic preparation for the GED (General Education Diploma) or high school equivalency certificate, and also, training in various vocations. Four of the six centers include child-care facilities.

Vocational training has been geared locally. For example, power sewing is indicated as a need in Southern Illinois. Other categories include drapery making, graphic arts, audio-visual techniques, and keypunch training courses.

For males, there is the whole gamut of auto mechanics, small motor rewinding and repair, concrete finishing, and carpentry, the training again based on local need.

In addition to the full-time training centers, the Department has made agreements through the local school boards for evening academic classes in areas that cannot be served by the comprehensive centers. These classes provide the basic literacy and the GED work three nights a week. Also, some individuals are in training in other institutions such as the Vocational Training Institution at Southern Illinois University or in programs such as those for practical nursing or beauty culture.

The Department of Public Aid has a fairly new program in its Operating Division. A presently small staff spends most of its time in the field, making contact with industry, finding out the employment needs of industry, and trying to match the employment need with a potential employee on public assistance rolls. This program is geared closely with the training centers, which are prepared to change vocational training if the need so indicates.

The first part of the caseworker's job in screening potentials for training of any kind is to work closely with the individual family, determining the motivation. The staff keeps a very close watch on the attendance records and the first absence is immediately followed up.

An individual starting out in the labor market at age 21 can expect to be trained or retrained seven to nine times before his working days come to an end. This certainly affects his motivation.

### What About the Children?

The Department of Public Aid has contributed to the campaign to prevent school dropouts. The Department has a scholarship program to help qualified ADC children attend college. In addition summer "help youth" programs involved 16,000 children in 1966.

### Needs of the Department

One great need of the Department of Public Aid is for the ways and means to continue some type of supportive service to the former public assistance recipient or the potential recipient.

For a number of years the Department was accused of doing little to motivate people toward self support. This picture has changed as the Department's staff has increased both in numbers and in qualifications. The Department still, however, can use additional staff.

## LEARN TO EARN

### The War on Poverty Must Be Total War

### Increasing Numbers, Decreasing Employability

In 1959 the Cook County Department of Public Aid set out to determine the reasons for the rise in welfare cases. A report on the resulting inquiries and studies was presented by Herbert Herman, Chief of the Bureau of Education and Training, Cook County Department of Public Aid.

The first study confirmed that unemployment was the major reason applicants were applying for assistance. Of the 767 unemployed persons included in the sample, 88 per cent had not completed high school, and 75 per cent were classified as unskilled. In addition, 61 per cent were new applicants who had never applied for assistance previously. Yet this was in a period of full employment and even a labor shortage.

A second study showed that technological changes were responsible for the loss of jobs of 59 per cent of the recipients. These individuals had been unemployed for 15 weeks or longer when the study was made; six months later, 73 per cent of this long-term group were still unemployed.

In April of 1961, another study of applicants showed that the general assistance rolls were still increasing. Whereas the semi-skilled workers accounted for 24.8 per cent of those interviewed in the first study, the figure had now jumped to 40 per cent.

A 1962 study by Science Research Associates established that functional illiteracy was a prime reason for dependency.

### Illiteracy and Job Competition

In March, 1962, the Cook County Department of Public Aid, in collaboration with the local Board of Education, inaugurated a massive attack on illiteracy including a counseling service, a testing unit, and vocational guidance programs.

There are now three daytime centers, with a total of about 400 students, and 14 evening centers dealing primarily with basic adult education. The Adult Basic Literacy program has helped 3,321 individuals acquire the necessary reading and arithmetical skills to enable them to compete for jobs in an expanding technological society.

A study made in 1965 of those persons who had completed training programs showed that 85 per cent were either no longer receiving public aid or were receiving assistance only to supplement their earnings.

### Types of Training Programs

Vocational training programs have been operated through MDTA, through collaboration with labor organizations and with industrial companies, and through the Department's own sheltered workshop program. These training programs include the following:

Yellow Cab driver training; food preparation training, a 13-week course; wood finishing training, a 16-week program; National Cash Register office machine training, a 12-week course; keypunch operator training; and other programs such as those offering training as nurses' aides, licensed practical nurses, department store sales and non-sales personnel, service station attendants, domestic workers, and food, diet and kitchen helpers.

The Public Aid Department has taken full advantage of the Manpower Development and Training Act of 1962 and, on a continuous basis, refers persons to the program for training in clerical and managerial work and the trades.

Since August, 1966, more than 4,735 persons entered training programs; 1,528 have been graduated, of whom 1,252 have been placed in employment.

The Department is particularly concerned about counseling and job placement for the youth who drops out of school.

### The Total Family Approach

The belief of the Cook County Department of Public Aid is that the way to break the chain of poverty and prevent a cycle of dependency is to restore the head of the family, even if it be the mother, to self-supporting employment. Where possible, care of pre-school children is provided on the school premises while the mother attends basic education or vocational training classes. Often, in training mothers, it is not necessary to have a vocational objective, but just family improvement in itself—making her a better housekeeper, having her keep the home cleaner, and, most important, restoring her self respect.

The focus of the Department is a total family approach. If Cook County is to have a preventative program as well as a curative one, then it must start even with Planned Parenthood.

One special program of the Department of Public Aid is POP (Parent Opportunity Program). This special demonstration project is intended to restore the man to the status of being the head of the family.

### Almost None are Just Lazy

Some men do not readily accept their position in the family; others cannot readily be accepted by an employer.

The Department places a thousand people a month in jobs through its Welfare Rehabilitation Service. Some of these individuals hold a job for such a short period that they may be placed a couple of times a month.

There is in addition a hard core of unemployable men with such severe problems that it is difficult even to get them into training programs. Even with today's labor shortages these men have a very difficult time finding a job, some because of personality problems and others, in tremendous numbers, who are unskilled and also so undisciplined that they are the chronic welfare types. The ex-convicts are the most difficult to deal with and the most difficult to place. There are almost no men on relief who are just plain lazy.

It is extremely difficult to find men eligible for an education or training program or even work relief. The Cook County Department of Public Aid is geared to train literally thousands of people. About 13,000 a month are in training at the present time, grouping together those in adult education, job training, work relief, Neighborhood Youth Corps, Jobs Opportunity and the Sheltered Workshop programs. About 20,000 or 25,000 could be handled efficiently.

Out of the total case load of about 95,000 cases (250,000 persons, including children) in the Cook County Department of Public Aid, between 13,000 and 15,000 are in one aspect of training or another.

### Education and Training Must be at the Center

The earth-lifting machines have done away with the pick and shovel man. There is a steady shifting from the unskilled to the semi-skilled, and from the semi-skilled, in turn, to the skilled and highly skilled.

The potential benefits of upgrading and training the unskilled are substantial, and the potential will be realized when education and training have a central role in an expanded, coordinated system of programs and policies.

# THE NEED TO KNOW

## Labor Wants a Warning

Labor in Illinois is particularly interested in training because it would assist workers displaced by automation, according to Lee M. Burkey, an attorney who represented the Illinois State Federation of Labor before the Commission.

Employers and government, both state and Federal, have a responsibility to aid in training programs for those who are displaced by automation. The unions, too, have both an interest in training and a duty. In some areas, they have participated effectively in setting up training programs for those displaced by automation.

### What Labor Asks

Unions, at the present time, are thinking in terms of two needs besides the need for training. When a number of people are going to be displaced by the introduction of automated equipment, the union asks that the number of hours be reduced, with no reduction in pay. The union also asks that there be some plan for severance pay. Yet these are solutions only to the temporary and immediate problem.

In the long run, training programs must be used that will enable people to move from one industry to another, or to be retrained for the same industry in which their jobs have been eaten away by automation.

### Labor Has Not Resisted Automation

When this second industrial revolution began, there was a lot of comment that labor would resist automation. This has not been the fact. Labor does resist the blatant displacement of a man without any consideration of his rights to be fitted back into society, and because of this position some segments of society have concluded that labor resists technological progress. In point of fact, labor has simply said, "If automation comes, let us not be forgotten. Let us have some place in the changing industrial society in which we must live and work and have our being."

The State AFL-CIO is favorably disposed to any kind of program by which displaced workers may have an opportunity for retraining. The national AFL-CIO has a very active program of cooperation on retraining with employers in various segments of the country where automation has become a problem for working people.

### What Government Might Provide

The AFL-CIO has not arbitrated in the field of automation. There have been some arbitrations with companies that are moving plants, but such a move does not necessarily have its inception in automation. A state law requiring notice of relocation would benefit laboring people.

### Warning by Grapevine

Where there is a labor union, such a problem may resolve itself best in the field of labor-management relationships. But there is no recourse for the unorganized. If an employer without a union decides to move, there is no hope or any help for those unorganized workers, short of the action of the Legislature.

It also might be wise to require employers to notify employees of impending automation, but in most instances the grapevine is very efficient.

Once plans for automation are known, the union is in a position to ask the employer what he plans for the employees. One of the greatest questions of people facing automation is the problem of seniority. People are troubled because they are afraid that they will be displaced.

If failing to give advance warning of automation changes threatens to become more common we are going to need legislation to require such warning.

# *1965-67* / The Cost of Acting on Automation

## Expenditures: 1965-67

A sum of $25,000 was appropriated for the Commission by the Illinois General Assembly "to carry out its duties under this Act" (H.B. 1310) for a two-year period. The Commission began its work in the latter part of 1965, but the expenses shown below were expended almost totally in 1966—only a one-year period. In comparing expenditures for the 1965-67 biennium to those projected for 1967-69, this fact should be borne in mind. Moreover, the time of all professional personnel and the time and services of most technical and clerical personnel were contributed to the Commission, except as noted below. It is estimated that Commission members and others contributed personnel staff services equivalent to a sum of $35,000 in 1966.

To complete the digest of proceedings and prepare a report to the Illinois General Assembly, including recommendations, will require about $5,000 in additional professional services.

### Commission Expenses: 1965-67*

| Expense Item | Expenditure |
|---|---|
| **Personnel Services:** | $ 2,042.50 |
| Part-Time Secretary | |
| Administrative Aid (Hearings) | |
| Editorial Assistant | |
| Contingent Clerical Service | |
| **Operation and Administrative:** | 9,351.97 |
| Commission Meeting Costs (Illinois) | |
| Hearings | |
| Surveys: Washington, D. C. and California | |
| Printing | |
| Postage | |
| Supplies | |
| Messenger Services | |
| Telephone | |
| Conference | |
| **TOTAL** | **$11,394.47** |

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*December 1965 to December 31, 1966

# *1967-69* / The Commission Program

## Projections for the Biennium

Plans and programs and activities that were projected by the Commission could not be encompassed within the stipulated time period, 1965-67. An effective and substantial beginning was made by the Commission. Limitations of time, staff, and resources, however, handicapped its efforts. Furthermore, the scope and complexity of problems encountered added to the dynamic character of technological change require continuous study over a *longer* period of time.

To complete the work of the Commission, enabling this body to propose well designed and effective legislative proposals and recommendations, the following steps are essential:

> Continue to conduct Hearings of Illinois industries that have been or are expected to be sharply affected by technological change and automation, including:
>
> Coal Industry
> Agriculture
> Contract Construction Industry
> Primary Metal Industries: Steel, etc.
> Railroad Industry
> Communication Industry
> Machinery Industry (except Electrical)
> Electrical Machinery, Equipment and Supply Industries
> Printing, Publishing and Allied Industries
> Motor Freight Transportation and Warehousing Industries
> Electric, Gas and Sanitary Services
> Health Services Industry
>
> Conduct Hearings of special situations in which communities in Illinois have been adversely or beneficially affected by scientific or technological developments or both, such as Hennepin and Weston.

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**NOTE:** The period covered by this proposal is July 1, 1967 to June 30, 1969.

Visit plants, installations, and facilities that incorporate a large measure of technological progress.

Arrange conferences of industry, university, and other related research and development personnel in Illinois. The aim of the conferences will be to determine the role of State government in facilitating the growth of research and technological progress.

Form a Research Committee to work on recommendations for collecting and analyzing data on technological progress in Illinois. The Committee also will seek to develop recommendations concerning improvement of data collection programs on industry growth, occupations, employment and unemployment rates at local community levels.

Arrange for a survey on the impact of technological change upon labor-management relations as reflected in contract agreements.

Confer with officials of state and Federal departments on the impact of technological change upon their programs and activities. Seek information, proposals, and recommendations for effectively meeting the challenge of technological progress.

Confer with labor leaders in Illinois. Confer with industrial leaders in Illinois. Explore the impact of the programs on science and technology that are being sponsored in Illinois under the State Technical Services Act of 1965.

Tap the know-how of scientists, engineers, and others who are engaged in advancing technological and scientific projects and programs.

Conduct seminar programs on the effect of science, technology, and cybernetics upon community institutions and society.

Prepare proposals and recommendations for enactment of legislation and reorganization of State functions and operations that are produced by technological change.

The study program outlined above is subject to modification as the Commission proceeds with its work. Flexibility and change of direction may become necessary as the Commission pursues its goals.

## BUDGET PROJECTIONS

Experience in the 1965-67 period demonstrates an urgent need for full-time professional and secretarial staff. Without such staff, the activities of the Commission as noted herein cannot be carried out in keeping with the nature of problems posed by technological change in Illinois. Even given the staff projected herein, it is doubtful that the full program can be accomplished without assistance of Illinois departmental, university, and Federal agency personnel.

# BUDGET ESTIMATES: 1967-69

| BUDGET ITEM | | PROJECTED EXPENSE | |
|---|---|---|---|
| | | 1967-68 | 1968-69 |
| **Personnel: Permanent** | | $31,000 | $33,000 |
| Executive Director | $15,000 | | |
| Administrative Assistant | 10,000 | | |
| Secretary | 6,000 | | |
| **Personnel: Temporary** | | 12,000 | 15,000* |
| Secretarial | $3,500 | | |
| Editorial | 6,000 | | |
| Other | 2,500 | | |
| **Administration** | | | |
| Office Rental | | 2,500 | 3,000 |
| Furniture | | 2,500 | 1,000 |
| Equipment | | 1,500 | 2,000 |
| Contingency Fund | | 1,000 | 1,000 |
| **Operations** | | | |
| Telephone | | 1,500 | 1,750 |
| Printing | | 1,200 | 4,500 |
| Duplication Services | | 500 | 500 |
| Postage | | 750 | 1,200 |
| Reimbursement of Commission Members | | 9,000 | 11,000 |
| Supplies | | 500 | 750 |
| Accounting Service | | 300 | 480 |
| Conferences | | 2,500 | 3,000 |
| Survey Travel | | 3,500 | 5,000 |
| Subscriptions, etc. | | 300 | 300 |
| Data Processing Services | | 6,000 | 7,500 |
| Contingency Fund | | 2,500 | 2,500 |
| | **TOTAL** | **$79,050** | **$92,480** |

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*Allows for increases at end of biennium to prepare reports.

**Based upon projections itemized above,** the Illinois Commission on Automation and Technological Progress requires a sum of $171,530 for the next biennium. This is a carefully considered estimate based upon Commission experience in the 1965-67 biennium.

# Recommendations of the Commission

The Illinois Commission on Automation and Technological Progress has been evaluating, for more than a year, the impact and implications of technological change upon industry, agriculture, education, unions, government, manpower, and community institutions of the State of Illinois.

To implement its investigation and studies the Commission has held one-day hearings on the meat-packing and the banking and insurance industries, and a two-day hearing on the vocational education and manpower training programs. Conferences were arranged with leading experts on automation, manpower, science and technology in Washington, D.C., Los Angeles, and San Francisco. The Commission heard and received reports and other materials from representatives of industry, labor, and government. Commission members visited industrial plants, business and government offices that have installed automated and computerized systems.

Based upon these and other activities, the Commission has arrived at 22 recommendations. These, however, are not all strictly formulated as recommendations. Some are more in the nature of proposals. Others suggest specific changes in public policy and program. Altogether, they are presented as a basis for study and action:

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**1.** The 74th Illinois General Assembly created the Illinois Commission on Automation and Technological Progress for the biennium 1965-67. During this period, the Commission initiated a program of activities to inquire into the subjects covered by HB 1310. However, because of the scope, range and complex nature of the subject matter under study, including continuing changes in technology, the Commission found itself limited by lack of time, staff and resources to probe many problems which emerged in the field of the Commission's work.

We recommend that the life of the State of Illinois Commission on Automation and Technological Progress be extended for another period of two years, that is, for the two-year period 1967-69.

**2.** To carry out the programs and activities necessary for the Commission to effectively discharge its responsibilities, we recommend a budget of $79,050 for 1967-68 and $92,480 for 1968-69 or a total of $171,500 for the biennium. See Appendix for itemized budget estimates.

The proposed budget enables the Commission to employ qualified staff to conduct a more in-depth study and thorough analysis.

**3.** Technological change, automation, and obsolescence are sometimes slow, creeping processes. On occasion, technological change is dramatic as in the cases of obsolescence of meatpacking plants; decline in railroad jobs caused by the introduction of automatic switching equipment; and reduction in coal mining operations occurring at the same time coal mining productivity per man hour is sharply increased. There is a need for a program of continuing surveys of Illinois technological progress, industry by industry. Such surveys should include data on industry technological developments, industry growth and decline, industry productivity, occupational changes, employment and unemployment.

We recognize the need for the Illinois Department of Business and Economic Development, in cooperation with the Illinois Department of Labor, to conduct regular and continuing surveys of technological progress of all industry in the State of Illinois. To assist in the implementation of this objective, we recommend that an Advisory Committee be appointed representing industry, labor, universities, and other interest groups.

**4.** There is presently no available comprehensive report on the impact of technological developments on business conditions and economic trends in Illinois. Nor is information available about plans and programs that aim to stimulate economic growth, scientific and technological progress in the State.

The Commission recommends that the Governor, with the aid of a Council of Economic Advisors, collect and assess data on the impact of technological progress upon the economy of the State and prepare an annual report to the Illinois General Assembly with such recommendations as he may deem appropriate. It is recognized, moreover, that the scope of such a report should encompass data which would measure the "economic health" of Illinois.

**5.** The State Technical Services Act of 1965 was enacted by the U.S. Congress to encourage economic growth in the states by wider diffusion and more effective application of science and technology in business and industry. The Congress seeks to support state and interstate programs which make available, to business and industrial leaders, benefits derived from Federally financed research as well as other research. The Illinois Department of Business and Economic Development already has initiated a State program based upon the State Technical Services Act of 1965. This program based on the Technical Services Act deserves support and encouragement.

The Commission recommends that the Illinois Department of Business and Economic Development in conjunction with other state agencies, labor, industry, and universities seek to expand its activities under the State Technical Services Act of 1965. State funds also should be utilized to supplement Federal support of such programs.

**6.** We recommend that a series of science and technology conferences be convened by a succeeding Illinois Commission on Automation and Technological Progress for the purpose of assisting in the development of State goals and policies that correlate research activities with economic growth and human needs. Funds to finance such conferences should be sought from the Office of State Technical Services, U.S. Department of Commerce, with the cooperation of the Illinois Department of Business and Economic Development.

**7.** Data are gathered in Illinois on (among other items) labor force, wages, hours, employment by industry and business establishment, and unemployment, under administrative regulations and requirements established by the U.S. Bureau of Labor Statistics and the U.S. Bureau of Employment Security which also finances the program. Emphasis is placed upon metropolitan areas in the collection of data. Other areas of the state and even local areas with metropolitan areas are inadequately covered or omitted.

We recommend that negotiations be undertaken by the Illinois Bureau of Employment Security with the U.S. Bureau of Employment Security to enlarge the scope and flexibility of data collection and analyses in the State of Illinois. Data on all significant areas of the State, including local areas within metropolitan areas, should be collected, subjected to analyses, and published.

To derive maximum benefits, data and analyses should be distributed widely to business, government, community, and labor organizations. Effective liaison should be developed with all media for dissemination of information to the public.

**8.** The Commission recognizes that the existing Science Advisory Council is performing an important service by its work on the problems arising from emerging sciences, automation, and technological change which affects the future economic potential of the State of Illinois.

The Commission recommends that permanent life and status be given to the Science and Advisory Council. The Commission also recommends selection of three members of the succeeding Illinois Commission on Automation and Technological Progress to serve ex officio on the Council.

**9.** Science and technology deeply affect the life, economy, and government of Illinois. Government policy and decision-making today are often dependent upon technical and scientific know-how. Nowhere within State government is this need manifest more often than at the executive level.

The Commission suggests that the Governor consider the appointment of a Science and Technology aide or adviser from among top ranking scientists in the State to serve as consultant to the Governor on matters concerning scientific and technological policy.

**10.** A study should be undertaken of the impact of technological change in industry upon the functions and services of the Illinois State Employment Service as performed for employers and job-seekers. Such a study should evaluate types of services, needs, organizational structure, finances, personnel requirements, and management. Recommendations should be developed that will enable the Illinois State Employment Service to cope effectively with manpower problems resulting from technological progress in the changing industrial environment of the State.

**11.** The Commission recognizes the need for establishing a statewide coordinating council to develop policies and review administrative operations of all manpower training, vocational education, and other specialized training programs, including those at the junior college and university levels. Such a council should include representatives from government agencies, labor, industry, junior colleges, universities and licensed occupations.

The Commission recommends that the Governor take under consideration the development of a coordinating council for manpower training, vocational education and other specialized training programs, including those at the junior college and university levels.

**12.** The Commission recommends that the Illinois Department of Labor and Board of Vocational Education and Rehabilitation create a comprehensive plan for the training of youth (below the baccalaureate level) in new occupations growing out of the introduction of technological innovations in industry. The plan should be directed particularly towards new career patterns that are emerging out of the forward thrust of science and technology.

The Commission recommends also that State authorities of the Board of Higher Education, Junior Colleges, and Office of the Superintendent of Instruction should be encouraged to participate in planning programs designed to facilitate the application and use of science and technology in industry and government.

**13.** The Illinois Department of Labor and the Board of Vocational Education and Rehabilitation should initiate a comprehensive review of technological trends in industry and their implications for changes in occupations during the next decade.

The Commission recommends that such findings be used as a basis for planning curricula for vocational training at both secondary and post-secondary levels. Recognition should be given to the need for building into training programs the versatility and flexibility in primary skills needed to facilitate future manpower shifts from obsolete to new occupations —with minimum job displacement.

**14.** We recommend that State agencies establish continuing contacts with industry on an industry trade level, drawing in trade associations and companies for cooperative relationships in educating and training manpower for new occupations in Illinois.

**15.** Success of the Weston Project may depend upon the availability of manpower with specific skills and training required for management and operation of this new facility.

The Commission recommends that the executive branch of the State of Illinois request the U.S. Atomic Energy Commission to prepare a manpower table for the Weston Project. This table should provide a manpower analysis and forecast showing occupational requirements, job classification structure, projected employment schedule, and salary specifications. Illinois should seek to become a primary source for supply of qualified manpower to the Weston Project.

The Commission recommends further that Illinois educational and other related institutions and agencies organize their resources to prepare students and personnel to meet manpower demands and requirements projected on the manpower table supplied by the U.S. Atomic Energy Commission.

**16.** The Commission recommends development of an advance warning system whereby employers who are planning, because of technological change, to shut-down, expand, or relocate plants, intra- or inter-state, should be encouraged to report such plans to the Illinois Department of Labor.

**17.** The Commission recommends that displaced workers and those about to be displaced because of technological change should be given opportunities to secure counseling and training that will aid them in coping with new and changing occupational requirements. The Illinois State Employment Service should cooperate in implementing these objectives.

**18.** The Commission recognizes that employees displaced as a result of technological progress may be subjected to severe economic hardship. When voluntary efforts fail, State and community programs should be available to enable displaced employees to maintain reasonable living standards for themselves and their families while they make job readjustments. Such programs should provide special training opportunities, training compensation, supplementary unemployment benefits, loans, and funds for job and family relocation.

**19.** Technological innovation has impaired the economies of many communities in Illinois. Obsolete plants have been relocated and shutdown. Entire industries such as coal mining, railroading and meatpacking have declined with disruption to commerce, business activity and labor markets in many places. Some communities deteriorated economically to the point of becoming "depressed areas."

The Commission recommends the establishment of a State program to assist communities whose economies have been depressed by technological changes in commerce, manufacturing, and agriculture. This State program should be integrated with Federal legislative enactments concerning area redevelopment, economic development and trade expansion. State authorities should seek to derive maximum benefits from these Federal programs for the economic reconstruction of areas in Illinois that suffer from economic dislocations.

**20.** The Commission recommends that each State agency should be requested to prepare and submit to the Executive Department and the Illinois General Assembly a report on the impact of technological change upon their functions and operations. Each agency also should be requested to outline steps being taken by them to utilize technological innovation for operational improvements in their departments.

**21.** The Commission recommends that the Personnel Department of Illinois give consideration to the establishment of an executive and administrative development program that would be geared to creating, among supervisory personnel, an awareness of scientific and technological progress as well as the utilization and application of such concepts in the innovation of State governmental operations.

**22.** The Commission recognizes the need for improving methods for collecting and disseminating new scientific and technological knowledge and innovations useful to Illinois industry and agriculture. Effective communication systems using computer technology and other instrumentalities should be developed so that research findings in science and technology may be placed in the hands of Illinois enterprise, universities, state agencies, and other institutions.

The Commission's recommendation to extend the life of the Illinois Commission on Automation and Technological Progress would provide a valuable and useful instrument for attaining these goals.

**SUBMITTED BY:**

*Milton Bram • Buddy W. Davis • Morgan M. Finley • Eugene Glover • John A. Graham • J. David Jones • William Karp • Chester P. Majewski • Tom Merritt • Larry S. Provo • Bertil T. Rosander • William J. Schoeninger • James von Boeckman • John Clinton Youle • Paul A. Ziegler.*

# APPENDIX

APPENDIX 1

# The Creating Legislation

## HOUSE BILL NO. 1310.

### Approved August 18, 1965

**AN ACT** to create a Commission to study automation and technological progress, defining its powers and duties and making an appropriation therefor.

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

SECTION 1. There is created a Commission to study the economic and social effect of automation and technological changes in industry, commerce, farms, labor market and in society, hereafter called the Commission, consisting of 5 members of the House of Representatives, not more than 3 of whom shall be of the same political party, appointed by the Speaker thereof, and 5 members of the Senate, not more than 3 of whom shall be of the same political party, to be appointed by the President pro tempore thereof, and 5 members of the public appointed by the Governor, all of which appointments shall be made prior to September 1, 1965. The members of the Commission shall serve without compensation, but shall be reimbursed for necessary expenses incurred in the performance of their duties under this Act. Vacancies shall be filled in a like manner as original appointments. The Commission shall select a chairman and such other officers as it deems necessary for its own membership, and shall establish rules for the transaction of its business.

SECTION 2. The Commission may employ and fix the compensation of such technical and clerical assistants as it deems necessary without regard to the "Personnel Code", approved July 18, 1955, or any other law of this State concerning State employment.

SECTION 3. The Commission shall study, investigate, analyze, and assess existing knowledge, problems, growth, effect and future tendency of automation and all other technological changes on industry, commerce, farms, labor market and society of the State of Illinois, and on the employment, training, retraining, economic change, economic hardship, social implications and benefit to industry, labor and the public, and on the programs, policies, operations, finances and fiscal burdens of the government of our state and its subdivisions, that have resulted and will result from such changes.

SECTION 4. In carrying out its functions the Commission shall solicit the cooperation and help of the various industrial, commercial, professional, business, and labor groups, as well as all other groups which are concerned with the problem, for the purpose of obtaining their views, experience, and assistance in providing direction for future study and such legislative action as may be necessary. The Commission shall further make full use of the information, studies, and experience of the various agencies of the State and Federal Government which have considered various aspects of the problem.

The Commission is authorized to secure directly from any executive department, bureau, agency, board, commission, office or instrumentality of this State information, suggestions, estimates and statistics for the purpose of this Act; and each such department, bureau, agency, board, commission, office or instrumentality is authorized and directed to furnish such information, suggestions, estimates, and statistics directly to the Commission upon its request.

The Commission shall cooperate with State and local bodies, and other public and private bodies, to obtain information, suggestions, estimates and statistics for the purpose of this Act.

SECTION 5. The Commission shall report the results of its study to the legislature no later than January 7, 1967, and may at that time submit proposed drafts of legislation recommendations therefor.

SECTION 6. The sum of $25,000 or so much thereof, as may be necessary is appropriated to the Commission to carry out its duties under this Act.

SECTION 7. This Act is repealed on July 1, 1967.

## APPENDIX 2

# Witnesses

## MEAT PACKING INDUSTRY HEARINGS

The following witnesses testified before the Meat-Packing Industry Hearings conducted July 14, 1966, by the State of Illinois Commission on Automation and Technological Progress, in the Hearing Room, General Offices of the Metropolitan Sanitary District of Greater Chicago, 100 E. Erie St., Chicago, Ill. 60611.

Adolph O. Berger, *regional director, North Central Regional Office, Bureau of Labor Statistics, U. S. Department of Labor*
*Larry Caine, *director of public relations, Union Stockyard and Transit Company*
Hon. John E. Cullerton, *director of labor, State of Illinois*
*Kerry Napuk, *research director, United Packing House, Food & Allied Workers of America, AFL-CIO*
Arnold Weber, Ph.D., *professor of industrial relations, Graduate School of Business, University of Chicago*
*James Wishart, *research director, and* Glenn Snyder, *Meat Packing Department, Amalgamated Meat Cutters and Butcher Workmen of North America, AFL-CIO.*

*Representatives designated by their organization to testify in lieu of the representatives originally invited by the Commission.

The following individuals also were invited to present testimony to the Commission at the Meat-Packing Industry Hearings on July 14, 1966, but they did not do so.

†Patrick E. Gorman, *secretary-treasurer, Amalgamated Meat Cutters and Butcher Workmen of North America, AFL-CIO*
R. G. Haynie, *president, Wilson and Company, Inc.*
†Ralph Helstein, *president, United Packinghouse, Food & Allied Workers of America, AFL-CIO*
P. M. Jarvis, *president, Swift and Company*
†Charles S. Potter, *president, Union Stockyard and Transit Company*
Roy Stone, *vice president, American Meat Institute*
Edward W. Wilson, *president, Armour and Company*

†*See witnesses indicated by* o *in list above for designated representative of appropriate organization.*

## BANKING INDUSTRY HEARINGS

The following witnesses testified before the Banking Hearings conducted September 15, 1966, at 10:00 a.m. by the State of Illinois Commission on Automation and Technological Progress in Room 212, Illinois State Capitol Building, Springfield, Ill.

**William W. Allen**, *vice president, Oak Park Trust and Savings Bank*
**David E. Connor**, *senior vice president, Commercial National Bank of Peoria*
**Joseph J. McAndrew**, *assistant vice president, First National Bank of Des Plaines*
***Paul Starkey**, *review examiner, Banking Division, Department of Financial Institutions, State of Illinois*
**Robert K. Wilmouth**, *vice president, The First National Bank of Chicago*

*Representative designated by his organization to testify in lieu of the representative originally invited by the Commission.

The following individual was invited to present testimony to the Commission at the Banking Hearings on September 15, 1966 at 10:00 a.m. but did not do so:

†**Joseph E. Knight**, *director, Department of Financial Institutions, State of Illinois*

†*See witness indicated by * in list above for designated representative of appropriate organization.*

## INSURANCE INDUSTRY HEARINGS

The following witnesses testified before the Insurance Hearings conducted September 15, 1966 at 2:00 p.m. by the State of Illinois Commission on Automation and Technological Progress in Room 212, Illinois State Capitol Building, Springfield, Ill.

**Howard Fricke**, *Horace Mann Insurance Company*
**Joseph W. Glynn**, *vice president and comptroller, Continental Assurance Company*
***C. W. Halsey**, *chief counselling deputy, Department of Insurance, State of Illinois*
**Leslie Mikkelson**, *vice president—accounting, State Farm Life Insurance Company*
**A. C. Vanselow**, *vice president and comptroller, Franklin Life Insurance Company*

*Representative designated by his organization to testify in lieu of the representative originally invited by the Commission.

The following individual was invited to present testimony to the Commission at the Insurance Hearings on September 15, 1966 at 2:00 p.m. but did not do so:

†**John Bolton**, *director, Department of Insurance, State of Illinois*

†*See witness indicated by * in list above for designated representative of appropriate organization.*

# VOCATIONAL EDUCATION AND MANPOWER TRAINING HEARINGS

The following witnesses testified before the Hearings on Vocational Education and Manpower Training Programs in Relation to Employer Requirements conducted October 20 and 21, 1966 in Rooms M-18 and M-11, Drake Hotel, Chicago, Ill. 60611.

THOMAS AUGUSTINE, *regional director, United States Bureau of Apprenticeship and Training*
JOHN BEAUMONT, *director, Division of Vocational Education*
*ALLEN BRIMM, *chief of manpower training, Illinois Department of Labor*
*LEO M. BURKEY, *attorney, representing Illinois AFL-CIO*
JOHN M. COULTER, *associate director of research and statistics, Chicago Association of Commerce and Industry*
*WILLIAM M. FISHBACK, *assistant chief of the Division of Downstate Operations and acting superintendent of recipient training and education, Illinois Department of Public Aid*
*HERBERT HERMAN, *chief, Bureau of Education and Training, Cook County Department of Public Aid*
*BENNETT HYMER, *research specialist on employment, Chicago Urban League*
*DR. ARTHUR R. LEHNE, *assistant superintendent in charge of Vocational and Practical Arts Education, Chicago Board of Education*
THOMAS NAYDER, *secretary, Cook County Building and Construction Trades Council*
*ROBERT I. SHACKFORD, *deputy director, Great Lakes Regional Office of Economic Opportunity*
JOSEPH SULLIVAN, *Illinois State Supervisor, United States Bureau of Apprenticeship and Training*
PAUL ZIMMERER, *executive director, Mayor's Committee for Economic and Cultural Development*

*Representatives designated by their organization to testify in lieu of the representatives originally invited by the Commission.

The following individuals also were invited to present testimony to the Commission at the Vocational Education and Manpower Training Hearings on October 20 and 21, 1966, but they did not do so.

†SAMUEL C. BERNSTEIN, *employment security administrator, Illinois Department of Labor*
†EDWIN C. BERRY, *executive director, The Chicago Urban League*
E. EDGERTON HART, *executive vice president, Illinois Manufacturers' Association*
†RAYMOND E. HARTH, *president, State Conference of Branches of NAACP (presentation was coordinated with testimony of Chicago Urban League)*
†THEODORE O. JONES, *regional director, Great Lakes Regional Office of Economic Opportunity*
WILLIAM A. LEE, *president, Chicago Federation of Labor and Industrial Union Council, AFL-CIO*
ORMAND P. LYMAN, *executive vice president, Illinois State Chamber of Commerce*
†THOMAS MURRAY, *president, Cook County Building and Construction Trades Council*
HON. RAY PAGE, *superintendent of public instruction (See list above—John Beaumont)*

†**Dr. James F. Redmond**, *general superintendent, Chicago Board of Education*
†**Reuben G. Soderstrom**, *president, Illinois State AFL-CIO*
**Rev. Lynward Stevenson**, *president, The Woodlawn Organization*
†**Harold O. Swank**, *director, Illinois Department of Public Aid*
†**Frank M. Whiston**, *president, Chicago Board of Education*
**Howard C. Wiechman**, *manager, Technical and Vocational Education Section, Portland Cement Association*

*†See witnesses indicated by * in list above for designated representative of appropriate organization.*